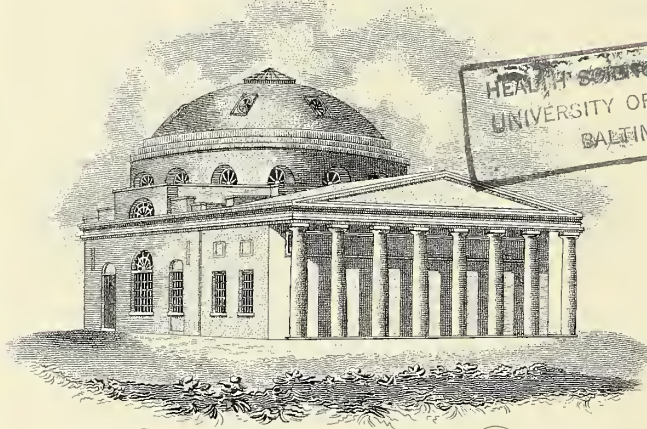






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JANUARY, 1951, TO DECEMBER, 1951, INCLUSIVE

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Fourth Annual

MID-WEST CANCER CONFERENCE

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Volume LII

JANUARY, 1951

No. 1

## Use of ACTH in Glomerular Nephritis

Andrew D. Mitchell, M.D., and William L. Valk, M.D.\*

Kansas City, Kansas

This report adds three cases of renal diseases treated with ACTH to those already reported. Thorn<sup>1</sup> presented the theory of such treatment and reported six cases of acute glomerulonephritis and four cases of subacute and chronic glomerulonephritis treated with ACTH. He also reported six patients with lupus erythematosus disseminatus and three patients with dermatomyositis who also had nephritis and were treated with ACTH.

Thorn concludes that there is no causal relationship between ACTH administration and improvement in acute glomerulonephritis and that ACTH has no favorable effect on subacute or chronic nephritis. He concludes from six patients that the basic course of the nephrotic syndrome is not permanently affected by ACTH treatment, but that definite beneficial diuresis and loss of sodium and chloride result and in some cases reduction in proteinuria is accomplished.

Farnsworth,<sup>2</sup> in an earlier report, presented two patients with acute glomerulonephritis whose urine changed from gross hematuria to straw colored on the fifth and sixth days of therapy with ACTH. One patient was improved, with reduction in proteinuria, no hematuria, and slight elevation of diastolic blood pressure. The other patient became clinically well after two courses of ACTH, having been ill with classical acute nephritis for several weeks. Her experience with two cases of chronic nephritis was again one of improvement following ACTH therapy. Reduction of the blood urea nitrogen, reduction of blood pressure and elevation of serum proteins resulted. Her results with the nephrotic syndrome in three patients were variable, but comparable to Thorn's.

In the light of these studies, we present three cases of nephritis treated with ACTH.

Case 1. B. M., a 19-year-old white female, became ill gradually over three-six months, and in March, 1950, complained of weakness and nausea. She was

found to have microscopic hematuria, albuminuria, and many granular casts in the urine. The remainder of the history was negative and physical examination revealed no abnormalities except pallor and lethargy. The blood pressure was 130/80. Cystoscopy and retrograde pyelograms were normal.

Strict bed rest with no dietary restrictions was observed until July, 1950, during which time she felt well except for weakness. She continued to have albumin, rbc, and casts in the urine and an elevated sedimentation rate.

She was given a diet containing 500 mgm. Na Cl, 3.5 gms. of K Cl per day, and 2½ grams protein/kilo/day. ACTH was given, 25 mg. every six hours from July 12 to July 22, 12.5 mgm. every six hours on July 23, and six mgm. every six hours on July 24 for a total of 1174 mgm. Before, during, and for eight days following this treatment, there was no change in blood pressure or EKG and no fluid balance or weight change. On the first day of treatment, she complained of dyspnea and numbness in the hands, and appeared apprehensive. These symptoms were controlled with 1/6 gr. of morphine. On the second day of therapy, she felt more vigorous and on the third day developed a voracious appetite. During 2½ months since treatment, she has remained symptomatically well.

Referring to Table 1, an adequate response to ACTH was obtained as shown by depression of circulating eosinophiles. The 24-hour loss of protein in the urine was reduced promptly and has at no time reached pretreatment levels, although it has increased in the past month.

Urinalyses during this three-month period of observation have shown reduction in the number of rbc, wbc, and casts, all observations having been made in centrifuged urine. The sedimentation rate has shown no improvement, and her weight has not changed significantly.

The total plasma proteins fluctuated considerably, but did not show improvement. The red blood count was not altered during or after treatment. The white

\*From the University of Kansas School of Medicine, Department of Surgery, Section of Urology.

blood count increased from 7,150 to 14,100 during treatment and returned to pretreatment levels promptly after stopping ACTH. Polymorphonuclear leukocytes increased from 59 to 90 per cent and have remained between 75 and 80 per cent since treatment. Lymphocytes fell from 33 per cent to six per cent during treatment and have remained between 20 per cent and 25 per cent since treatment. The platelet count increased from 214,000 to 400,000 and has remained above 380,000 since.

During administration of ACTH, the urinary loss of all electrolytes measured was below normal with most marked reduction in Na and Cl. At the time the dose of ACTH was halved, the excretion of all four electrolytes increased with the greatest change in Na and Cl. On this same day, the circulating eosinophiles increased to 44. The loss then stabilized and all elements were lost in amounts somewhat below the expected amount.

Renal function was measured during this study primarily by means of inulin (Cin) and sodium para amino hippurate clearances (Cpah), and tubular mass for glucose (TMg) after the method described by Goldring and Chasis<sup>3</sup> and as used by us in the Renogram.<sup>4</sup> Urea clearance and PSP tests

were done at the beginning and end of treatment and showed no significant change. It can be seen from Table 1 that there was a slight increase in filtration rate (Cin) and effective plasma flow (Cpah) after seven days of treatment. Since treatment, the filtration rate has been above the pretreatment level on all studies and has increased at the last observation by a significant amount. The effective plasma flow conversely fell well below the pretreatment level three days after stopping ACTH and has now been depressed to 45 per cent of normal. The tubular mass for glucose (TMg) was not significantly changed during this period. The filtration fraction (FF) was not greatly affected until the last study on October 22, 1950. Also during this period of observation, there was no significant change in blood chemistry.

Case 2. B. S., a 21-year-old white male, was discovered to have hypertension, albuminuria, and microscopic hematuria in June, 1949. He had not felt ill and had no symptoms on admission in June, 1950. He appeared healthy, had a negative physical examination with a blood pressure of 135/95, had 10-15 rbc/hpf, one plus albuminuria, and a rare granular cast per hpf in the urine. Pyelograms and

OATE	ACTH	E05.	URINALYSIS						SERUM					MILLIEQUIVALENTS 24 hr. Urine				C <sub>U</sub>				C <sub>IN</sub>				FF	TM G
			24 hr. Protein- uria Gm	Rbc hpf.	Wbc hpf.	Cells lpf.	SEO RATE	Wt. Kilo.	Total Protein	Serum Alb.	Serum Glob.	Na	K	Cl	HPO <sub>4</sub>	cc/min.	%15min.	PSP %60min.	cc/min.	C <sub>PAH</sub> cc/min.							
7-10-50		25	3.26	30-40	20-30	6-8	16	43	6.5	4.41	2.09	neg.	neg.	neg.	neg.	42	32.5	82	82	586	14	271					
12	25 mgm. q 6 hrs.																										
13	"	19	1.78				18	42																			
14	"	22	1.68				20	42.3																			
15	"	2	1.03				22	42.5	5.5			2.95	20.2	12.	19.5												
18	"		1.38				20	42.3																			
17	"	2	2.8	10-15	rare	rare	18	42.3																			
18	"	0	1.9				15	42.3				3.3	22.3	7.15	20.7				93	668	13.75						
19	"	0					16	42.5	5.8																		
20	"	0	1.25	10	10-15	3-4	9	42.5	4.8																		
21	"	5	.54	Gross	occ. clump	3	14	42.6																			
22	"	16					6	42.5	5.2																		
23	12.5 mgm. q 6 hrs.							42.5	5.8	3.88	1.8																
24	8 mgm. q 6 hrs.	44	1.66	2-3	10-15	0	13	42.5	5.7			45.5	47.3	52.2	42.5	40	41	96.5									
25		161	0				7	42.7	4.8																		
26		116	0	rare	rare	0	10		4.8																		
27		86	0.66	rare	rare	0	16	42.5	5.6			43.8	48.5	36.6	—				88.8	466	19	254					
28		213	1.8	rare	rare	0	17	42.5	5.5			48.1	94.5	59.1	—												
29		238		1-2	0	0	12	43	5.5																		
30		111	1.9	0	0	0		43	5.6																		
31			0.9				20		5.2			35.	64	39.5	30												
8-1-50		205		0	0	0	19	42.5																			
28			0.723	2-4 hpf.	0-1 hpf.	rare	21	41.8	7.0										86.8	485	17.9	411					
10-12-50			2.1	5-8 hpf.	6-8 hpf.	0-1 lpf.	18.5		5.5			35.	24.	48	17.8				107	285	37.5	279					

Table 1



urine culture were negative and a diagnosis of sub-acute to chronic glomerulonephritis was made.

On a diet of 500 mgm. of NaCl and three grams of Kcl daily and 2½ grams protein/kilo/day, ACTH was started at 160 mgm/day in divided doses and continued for 10 days, at which time the dose was halved and continued for three more days for a total of 1.84 grams.

During treatment, an adequate eosinophile response was obtained and maintained (Table 2), the 24-hour albuminuria increased initially and became reduced when the dose of ACTH was reduced, only to increase to 7.9 grams/24 hours one month after treatment. There was no significant change in the formed elements in the urine, and the sedimentation rate was not improved except during the last two days of treatment. During and in the week following treatment, 7.4 kilo of weight were lost. From the 24-hour urinary studies, there does not appear to have been a corresponding loss of electrolyte. In the early part of treatment, there was a definite reduction in loss of Na and Cl with increased excretion of K. On July 30, 1950, there was an imbalance between the loss of Na and K. One month after treatment, there had been a gain of 9.8 kilograms of weight and the loss of all electrolytes was below pretreatment levels.

Renal function studies showed depression of

glomerular filtration rate and effective plasma flow at the midpoint of treatment which returned to pretreatment values three days after ACTH was discontinued. There was no significant change in blood pressure during or immediately after treatment. One month after treatment, the blood pressure was elevated to 165/110, the glomerular filtration rate was elevated, and the effective plasma flow was increased. On all four occasions, the filtration fraction (FF) did not vary more than 4.4 per cent. Blood chemistry studies showed no abnormalities.

Case 3. N. P., a 36-year-old white male, was well until May 23, 1950, when he developed a sore throat followed by the development of dependent edema and dark urine. Anasarca, dyspnea, and oliguria with albuminuria and hematuria followed. After three days of oliguria, diuresis ensued with a loss of 18 kilograms of weight in four days. Since that time the patient had felt well except for headache. Family history revealed that one uncle had had "Bright's disease."

Physical examination on admission was negative except for a blood pressure of 165/105, and the urine revealed albuminuria, gross hematuria, and the presence of casts.

ACTH was started on July 10, 1950, at 40 mgm. every six hours for 10 days, 30 mgms. every six hours for one day, and 20 mgms. every six hours for

DATE	ACTH	URINALYSIS										MILLIEQUIVALENTS 24-hour Urine				C <sub>U</sub>	PSP	PSP	C <sub>IN</sub>	C <sub>PAH</sub>		
		E05.	24-hr. Protein- uria Gm.	Rbc hpf.	Wbc hpf.	Casts lpf.	SED RATE	WT. KILO.	TOTAL Protein	SERUM ALB.	SERUM GLOB.	Na	K	Cl	HPO <sub>4</sub>	cc/min.	% 15min	% 60min	cc/min.	cc/min.	TM <sub>G</sub>	FF
7-10-50		230	3.18	10-15	0	occ.	15	83.6	6.1	4.25	1.85	67.2	92	91	85.5	61	24	68	157.5	425	306	37
12	40mgm. q 6 hrs.	63		50-60		rare	13	81														
13	"	16	5.2	50-60	occ.	0	13	81	5.3													
14	"	16	14.6	10-12	1-3	1-3	15	81	5.6			10.5	94.4	45	34							
15	"	2	3.2	60-70	1-3	2	12	81														
16	"		6.8				21	80.2	5.8													
17	"	5	7.1				15	81	6.0													
18	"	0	5.8	rare	rare	rare	13	79.7	8.0			25.2	176.	51	83.8				118	356	326	32.6
19	"		9.0	0-2	0	0	10	80														
20	"	5		20-30	5-8	rare		79.5	8.0													
21	"	5	8.6	8-10	3-5	0	9	79				48.	92.	121	110							
22	20mgm. q 6 hrs.	5	9.0	20-30	0	0-2	11	78.8														
23	"	22		10-12	0	0-2	7	77.8														
24	"	5	2.7	10-15	occ.	rare	5	78.2	5.9	4.31	1.59	40	81.2	53.8	87.5							
25		105	2.4				8	77.8	5.9							93	21.7	80.4				
26		183	2.9	8-10	acc.	rare	9	77.2	5.8													
27		122	3.4	5-6	rare	rare		77.2											158	481	610	32.8
28		177	1.9	2-3	0	0	13	76.8				37.8	92.	73.3	41							
29		138	3.1	5-6	2-3	2-3	15	77	6.2													
30			5.3				18	76.8				14.5	120	90.2	56.8							
31		177	4.1				19	76.2														
8-28-50			7.9	30-40	acc.	0	12.5	86.0	6.0			34.4	12	36.4	41.6				182	515	471	35.3

Table 2

one day. A total of 1.8 grams ACTH was given. During this time the diet contained 500 mgm. NaCl and 3.5 gms. KCl daily and 2½ gms. protein/kilo/day.

During treatment, there were no subjective symptoms, and the blood pressure averaged 140/90. However, the blood pressure was 170/120 a month after treatment. There were no EKG changes. There was no weight gain during treatment. However, in the week following discontinuance of ACTH, the fluid intake averaged 3800 cc. and the fluid output averaged 6200 cc. During this week, there was a reduction of 4.4 kilograms in body weight. In the month following treatment, body weight increased 6.6 kilograms.

The reduction of circulating eosinophiles (Table 3) was definite, but not as complete as in Cases 1 and 2, and when the dose was halved on July 20, 1950, the eosinophile increase was such as to indicate that no ACTH effect was present.

Twenty-four hour albuminuria, urinary sediment, sedimentation rate, and serum proteins were not significantly altered by ACTH. Changes in the blood count and platelets were similar to Cases 1 and 2.

Urinary loss of Na and Cl was greatly reduced during ACTH administration and increased following discontinuance of the drug. The high loss of K throughout hospitalization was due to oral administration of KCl.

Perhaps the most significant observation made on this patient was the definite and severe reduction in renal function during and at four days after finishing ACTH and the marked improvement in function 30 days later. The inulin and Pah clearances 30 days after treatment were significantly increased over pretreatment measures.

The NPN became elevated during and immediately after treatment when function was reduced below 35 per cent of normal. There was moderate acidosis at the beginning of these observations which, unfortunately, was not followed. The cholesterol level increased at the midpoint of treatment and dropped an equal amount below the pretreatment value five days after treatment. Pretreatment cholesterol was 354, during treatment 465, five days after treatment 201.

Since the last observations on this patient he has not been available for clinical observation, but he is

DATE	ACTH	URINALYSIS					SED RATE	Wt. KILO.	Total Protein	Serum Alb.	Serum Glob.	MILLIEQUIVALENTS 24 hr. Urine				C <sub>U</sub> cc/min.	PSP % 15 min.	PSP % 60 min.	C <sub>IN</sub> cc/min.	C <sub>PAH</sub> cc/min.	FF	T.M. <sub>0</sub>
		EOS.	24 hr. Protein Gm.	Rbc hpf.	Wbc hpf.	Costs lpf.						Na	K	Cl	HPO <sub>4</sub>							
6-26				Gross	15-20	0-1	25	77.2	5.4	3.33	2.07					26	18	52.4				
7-5		105																	74.8	355	21	239
10	40 mgm. q 6 hrs.		9.15	Gross		1-3		75.5	5.7													
11	"	22	7.6				33		5.8													
12	"	8	9.6	Gross	10-15	0-2	25	75.9	6.5													
13	"	19	7.8	Gross	30-35	0-2	25	75.8				8.9	84.3	12.1	37.5							
14	"	2	10.4	60-70	15-20	2-4	26	75.5	5.1													
15	"	19	7.2	15-20	5-10	rare	26	75	5.4	3.74	1.66	13.8	94.5	45.0	43.0				47.5	220	21.5	
16	"		12.15				29	74.2	5.1													
17	"	11	12.6	Gross		4-6	27	74.5	5.1													
18	"	22					30	74.5	5.3													
19	"	11	8.5	Gross		2-3	31	75.9	4.8			9.6	56.2	21.5	34.2							
20	30 mgm. q 6 hrs.	88	7.4					76.4														
21	20 mgm. q 6 hrs.	72	7.25				26	76.4														
22		339	10.4				28	76.4	4.8			36.	125	73.2	99.5							
23		316	9.5	Gross		0-1	29	74.5	5.3													
24		108	6.5	Gross		rare	30	73	5.1	2.01	3.09	148.	94.5	172	63.							
25									5.1										30	270	11.5	112
26		183		Gross		rare	26		5.3			105	117.	48.	57.							
27		177		Gross		rare		72.3				270	148	139	64.							
28		172		Gross		rare	26	72.														
29		194		8-10		rare	27	72.	5.5			25.7	69	42.5	64.							
30			5.3				31	72.														
31		272	4.4				27	71.6				19.4	122.	53.8	75.5							
8-30			6.1	15-20	8-10	4-5	26	77.2	5.6			98	35.2	115	60.5				91.5	443	20.7	360

Table 3



reported to have hematuria, edema, and hypertension.

#### Discussion

Although physiologic changes were effected, no cure or lasting improvement can be attributed to ACTH in these patients. Case 1 is improved to date as far as the 24-hour albuminuria and urinary sediment are concerned, and this improvement was concurrent with ACTH administration.

Case 2 demonstrated no laboratory or clinical improvement.

The only item on the positive side in Case 3 is the marked recovery of glomerular filtration and effective plasma flow one month after these measures were depressed.

Both Cases 2 and 3 showed reduction in glomerular filtration and effective plasma flow during

ACTH therapy, while Case 1 showed an increase in these measures.

Although these results agree with those of Thorn and are not favorable, ACTH causes enough transient alterations in the nephritic complex to warrant further investigation.

#### Summary

Three cases of glomerulonephritis treated with a single course of ACTH are presented.

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## Intestinal Obstruction: Report of Two Unusual Cases

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Numerous cases of foreign body obstruction of the intestine have been reported, but the following two cases are unusual from the nature of the foreign bodies and because Case Number 2 illustrates the exception to the old saying, "Anything that can be swallowed, can be passed."

#### Case No. 1

The patient, a female, aged 72, was first seen on April 13, 1950, complaining of pain in the right upper quadrant of the abdomen and vomiting of about 10 hours duration. Onset was a few hours after eating a supper of fried country sausage and fried potatoes. She had had two similar attacks, one six months and the other approximately one year preceding the present illness. Pain and nausea were relieved by morphine hypodermically and calcium carbonate by mouth, until early in the morning of April 15, 1950, when both original complaints returned, but this time she said the vomitus had a foul odor and taste.

She was admitted to the hospital on April 15, 1950, and received immediate relief from her symptoms as soon as gastric suction was started. Her temperature on admission was 98.0, her pulse 72 and leucocyte count 7,550. Barium enema disclosed complete filling of the colon and two small opaque shadows in the region of the gallbladder, as well as gaseous distention of a portion of the small intestine. A flat plate of the abdomen showed some dis-

tention of the small intestine, without the anticipated "step-ladder" pattern and failed to disclose any opaque shadows.

On April 17, 1950, her temperature and pulse were still normal and all abdominal discomfort had disappeared, so gastric suction was discontinued. Six hours later the abdomen was again distended and her nausea and pain returned. Prostigmine was given without relief, so gastric suction was again started and pitressin in .5 cc doses given every four hours with an oil and glycerin enema twice daily. Large quantities of gas would be passed with each enema, so on April 20, 1950, gastric suction was again discontinued, and pitressin was discontinued on April 22, 1950, after it was noticed that she

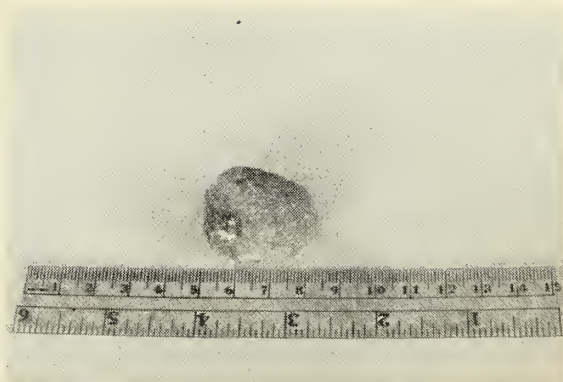


Figure 1. Gallstone passed by a 72-year-old woman.

developed some discomfort in the lower abdomen after each injection.

On the morning of April 23, 1950, she had a large liquid bowel movement, without an enema, at which time she passed the large gallstone shown in the illustration, together with three smaller stones. This was followed by a total of 13 liquid bowel movements with large quantities of gas in the next 24 hours.

She was dismissed from the hospital on April 23, 1950, free of all symptoms and undoubtedly free of all gall stones.

#### Comment

This case illustrates a cause for intestinal obstruction which is seen on rare occasions. Most cases previously reported have been caused by stones which were radio-opaque and had been removed surgically. Radiographs of this stone, after passage, showed a shadow of the same or lighter density than normal tissue density. Since its weight was only 10.6 gms., one presumes it is composed of bile salts and cholesterol, without much calcium.

The administration of pitressin was on the assumption that we were dealing with a case of paralytic ileus, following a severe attack of acute cholecystitis. It is fortunate this patient did not have some complication from this form of bowel stimulation.

#### Case No. 2

The second case is that of a boy, 11 years old, admitted to the Lyons Hospital with a complaint of vomiting and pain in the right lower quadrant of the abdomen of two days duration. The mother stated that the boy had been eating some things, away from home, but other than this no specific things could be mentioned. Physical examination was negative except for a tender mass in the right lower quadrant of the abdomen with rigidity of the abdominal muscles in this region, as well as tenderness on rectal examination in this same area.



Figure 2. Sponge rubber ball removed surgically from the ileum of an 11-year-old boy.

The laboratory reported a leucocyte count of 17,000 and two plus albumen and hyaline casts in the urine.

A diagnosis of appendicitis, with possible abscess formation, was made, and the appendix was removed through a McBurney incision. The appendix was slightly injected, but not distended or ruptured. A cystic mass was located in the left lower quadrant, but was ruptured in an attempt to bring it into view, allowing a moderate amount of clear serous fluid to escape into the peritoneal cavity.

Two days following surgery the abdomen became distended and vomiting continued, all of which was thought to be due to a paralytic ileus from the irritation of the fluid from the ruptured cyst. Gastric suction and intravenous fluids failed to control the vomiting or distention, and a flat-plate of the abdomen showed a mass in the region of the cecum and gaseous distention of the small intestine above this area. The boy's mother then gave the story that the boy had been eating "lots of different things" away from home and on one occasion had vomited some sand and grass.

A diagnosis of a bezoar was then made and the boy was again taken to surgery, at which time a rubber ball, as illustrated, was removed from the ileum, approximately 12 inches from the cecum. The patient made an uneventful recovery following this second operation and was discharged from the hospital one week after surgery.

#### Comment

The error in diagnosis in this case was due to the inability to obtain a complete history, either from the patient or his mother. The boy repeatedly denied swallowing a ball, even after it was presented to him following surgery. The question then arises as to how an 11-year-old boy could swallow a sponge rubber ball measuring 4.3 cms. in diameter. When removed at surgery the ball measured 5.2 cms. and was dis-

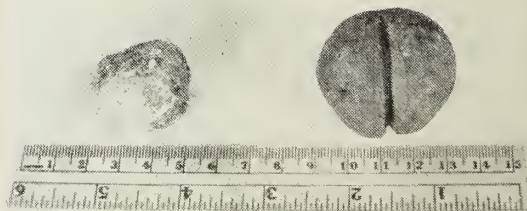


Figure 3. Gallstone passed by a 72-year-old woman and sponge rubber ball removed from ileum of an 11-year-old boy.



ended with fluid much like a sponge. One month after being placed on an open shelf, it had decreased in size to 2.2 cms. Possibly, if it had remained its

original size it would have been passed without difficulty and the old adage would still be true, "What can be swallowed can be passed."

## Problems in Treatment of Juvenile Delinquency at the Kansas Boys Industrial School\*

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There appears to be an awakening in the field of delinquency treatment. As we leave behind us the practices of ferretous detection, admonishing prosecution, and cruel punishment, we are establishing treatment procedures which are based upon meeting human psychological and physical needs. However, we are not far from a period when a solution to the problem of delinquency in the community was to banish the child to a "reform school." This "last resort" effort would usually occur after several inadequately planned and inadequately carried out probation periods. It was somehow believed that at the reform school a term of stern discipline administered by a group of untrained personnel would teach the child "a lesson" and would miraculously change him into a well-adjusted, law abiding citizen. Ignorant of personality differences and management techniques, these staff members administered the same direction to psychopathic, psychotic, neurotic, mentally defective, and even more normal children. Aggressive behavior which occurred frequently was met by counter-aggression of personnel in authority until the delinquent often became a hardened adult offender.

In our attempt to plan an adequate institutional milieu for our delinquent boys, we find the problems interrelated, yet falling into three general areas, i.e., the boys' home and community environments, treatment and management of the boys within the institution, and management of institutional personnel.

We are well aware that many of the problems we are presenting in this paper have been presented since the turn of the century, but it makes them none the less true or pressing, at the present, nationally as well as locally. Although mental hospitals which generally care for other types of emotional illnesses have been given a tremendous impetus during recent

years, treatment for delinquent children has scarcely proceeded apace.

Since it is generally agreed that the environment influences personality structure and functioning, it may be instructive if some aspects of the delinquents' problem environments are reviewed. The environment is a problem from the standpoint of having contributed to the children's maladjustments, but since it usually remains problematic while the boys are in the institution, it also looms as a problem when placement plans are considered for the boys.

The aspects of the environment dealt with in this report are the family as a psychological unit, play groups, and the community.

### The Boys' Home and Community Environments

*The Family as a Psychological Unit.* Even though the families may be constructed normally, i.e., natural parents and their children, almost all of our delinquent boys come from families in which there are disturbed family interpersonal relationships. The multitude of factors contributing to these disturbed family relationships are generally complexly interrelated, their significance being relative and dependent upon the context of factors in which they occur. Some of the more apparent major factors contributing to disturbed family relationships within the family unit are the pathological structure and functioning of the parents and siblings, as well as the delinquent's siblings. A discussion of these factors will not be undertaken, nor will the personality of our delinquents be gone into in this paper, except to point out the often overlooked fact that they frequently contribute to disturbed family relationships as well as being affected by them. Parents absent from the home because of work schedule requirements naturally are not able to give the children the guidance and supervision needed. Inadequate physical necessities are not an end in themselves but create various profound psychological reactions.

\*This manuscript is an adaptation of a paper of the same title presented at the December 1949 meeting of the Kansas Psychiatric Association.

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*The Personalities of the Parents and Observations of Their Interactions.*<sup>†</sup> Everyone knows that even though individual psychological adjustments are as varied and unique as individual physical appearances, there are a sufficient number of various consistent similarities and differences in individual psychological adjustments to permit the establishment of nosological categories. Even though there are inherent dangers in the use of nosological concepts for communication, e.g., overgeneralizations and name calling, care in definition of concepts and application of these concepts eliminates or at least reduces these dangers. The diagnostic categories used in this paper are those which have sufficient agreement to have common acceptance, with the exception of the concept of psychopathic personality. To avoid misunderstanding, the term is used in this report to designate those individuals who are characterized by the definition set forth by Noyes.<sup>1</sup> In summary, the "psychopathic is so\* characterized by defects of character and feeling, by poverty of sentiment and anomalies of impulse and temperament, as well as by exaggerations and deviations in emotional and instinctive reactions, that he does not develop the type or degree of social qualities necessary for the demands of life."

Many parents of our delinquents appear to be neurotic, psychopathic, and some even psychotic in their psychological adjustment. Some of the parents appear to be functioning on a mentally defective level. Some apparently normal parents have been observed to maintain a relatively smooth surfaced marital adjustment, yet they appear to be troubled by underlying conflicts which are expressed subtly and damagingly within the family constellation but rarely are noticeable to the casual observer.

Some parents were initially observed to be relatively normal in their adjustment and were relatively strong positive factors in their respective family constellation; but upon closer examination, they were found to be insufficiently strong to counterbalance or outweigh the other stronger negative factors in the family constellation, or some other negative factors impinging on the family constellation from the community, or a combination of these negative factors. These various pathological conditions have been observed in their classical states as well as in their various stages of development.

These pathological personalities, interacting in their relationships with each other in the family and with people outside the family, create a variety of morbid psychological constellations. The variety

of constellations appear to be on a continuum from the pole where the parents' pathologies are mutually supporting in maintaining a low level of adjustment, to the pole where the parents' pathologies are mutually irritating. In the constellation where the parents are mutually supporting in their relationships there seem to be less malignant family relationships, perhaps due to fewer conflicts and less open strife. However, family constellations with maladjusted parents naturally provide the children with inconsistent, erratic, and generally inadequate identifications; and rarely are maladjusted parents able to carry on undisturbed constructive emotional relationships between themselves and with their children.

*The Playgroups of Our Delinquents.* Associates exert tremendous influence upon an individual's thinking, emotional life, and action. A child's social nature demands expression and if this expression is not properly guided, it may result in harmful social contacts and anti-social action. Within some unsupervised playgroups, traditions of delinquency are, to an extent, preserved and transmitted.

The playgroups of the delinquents at the Kansas Boys Industrial School (hereinafter referred to as KBIS) vary from diffuse and loosely organized groups to well organized units. The playgroups with which the boys are associated are primarily anti-social regardless of their degree of development. Usually only limited recreational facilities are available to them; play activities are few; and the extent of participation is minimal.

*The Communities From Which Our Delinquents Come.* Although a great number of communities are represented in the KBIS population, many of the boys come from several Kansas communities which are relatively highly industrialized, with their usual accompanying slum areas consisting of inadequate and unsatisfactory housing, lack of playgrounds and planned recreational programs, and inferior school programs. However, whether the community is industrial or not, our population is composed of boys from the poorer sections, the "across the track areas" of the communities.

#### Treatment and Management of the Boys Within the Institution

When a boy is brought to the school he is usually accompanied by a sheriff or probation officer who may carry a gun. He has probably been in a jail or detention home for an indefinite period of time, and frequently presents a dirty, unkempt, and disheveled appearance. To most of the boys, this is the end of the road where they are to be punished for some moral offense. Some have been oversold by well-meaning judges who lead their charges to believe that they are going to a fancy boarding school

<sup>†</sup>This section contains some preliminary generalizations regarding the personality of the parents of our delinquents and the nature of the parental interpersonal relationships. A more detailed presentation is planned for future publication.

\*Word added by authors.



from which they will be discharged within a few weeks. Other boys have been threatened with a commitment to the KBIS on numerous occasions and at last the axe has fallen. The boys almost invariably come with the impression that they are sent for a moral offense; and although they present an exterior of fearfulness or cheerfulness, arrogance or blandness, there is usually an inner feeling of hopelessness, hostility, and "it's me against these people, too." They have come to pay a price rather than to meet a problem.

During the initial weeks the boy's hostility to the school is usually marked, and runaways are frequent. The boy sees little to lose by continued anti-social actions in the school, and identification with the school and with the personnel at this time is minimal. He usually views with some suspicion any attempt to help him. Early in his residency the boy is usually relatively frank about his family difficulties, but later he attempts to paint a rosy picture because he knows he will not be paroled to a particularly unhealthy family situation.

Latent parental rejection, which perhaps has been life long, frequently develops into open repudiation of their boys when they are committed to our institution. Concretely, some parents are ashamed of their children and others say, "Well, the state has him now; let them support him and worry about him." This naturally does not facilitate treatment.

Within the school we make numerous attempts to influence the boys favorably by whatever method seems advisable at the time, and these methods pose various problems. One method that has been initiated is group therapy. This work is still too young for a complete evaluation; however, some problems are ever present. Group therapy naturally may become a "gripe club" as some actually call it, or if activities such as hikes are planned for the session it becomes an escape from the reality with little actual dealing with the boys' problems. Too, if the group leader is not mature, well adjusted, and above all, acquainted with the total KBIS situation, he may be gullible and may indeed become a part of the boys' problems. He also should not be over-idealistic in championing the boys' rights without having critical judgment of the social situation. While one of the aims of group therapy is to increase the ability of the boy to express himself and speak his feelings, it is a corollary that if this is done too fast and unwisely, it will increase the anxiety of the staff and thereby increase their feeling that the boys are getting out of hand. It is possible to transform the released aggressions, although misplaced, into a healthy situation.

For instance, in one group therapy situation the boys became thoroughly convinced that the food,

although actually quite good, was terrible. It was arranged that the dietitian should meet them (incidentally, she was very frightened by their aggressive views). Apparently this pleased them and they formed an advisory committee to help her and actually polled the school on food preferences. Again, with reference to released aggression which comes through treatment, it seems that much of our population is of that type which quickly transforms the aggression which has been repressed or suppressed into physical anti-social action.

Although individual psychotherapy is still relatively new, in our setting even good therapeutic prospects are frequently difficult to manage. First, the boy associates any adult figure in the school with authority and then assumes that, because of his own orientation, this adult is apt to be a punitive individual. After these anxieties are allayed and dealt with therapeutically, the boy who may be progressing satisfactorily becomes aware that his friends who came to the school after he did are leaving. The longer the child is away from his family, the more he represses his views and forgets the unpleasant situations. Naturally he is inclined to adjust to the school regulations at this point rather than be inclined to discuss his problems further and risk being retained in the school.

Another problem frequently met with in counseling and psychotherapy is that the child who comes to us has often been mistreated and finds it difficult to understand the role of the therapist. He perceives him as a "good" person and assumes that he would champion his troubles and come to his aid in circumstances in which a therapist should not intervene.

In our population we find a wide range of diagnostic groups such as the psychotics, neurotics, psychopaths, and children of borderline intelligence. There are practically no facilities in Kansas for treating psychotic children and practically none for training mentally defectives to lead a life outside of institutions. Surprisingly enough, some of our psychotic children have gone into a remission in our environment with little other than milieu therapy. We must add, however, that we seriously question the advisability of retaining psychotic children in our environment.

In attempting to provide a sympathetic and helpful milieu for our boys, the non-professional staff members in particular find it difficult to manage a group of 30 to 40 aggressive boys alone, have little time for individual attention and have to rely upon stern and drastic disciplinary measures when individual treatment, attention, and management is highly desirable. They have difficulty in perceiving the differences in children who are

anti-social as contrasted with asocial ones. When they turn to the psychiatrists or other therapists they are usually frantic, pushed to the last ditch, and desire on-the-spot relief. Too, our children, because of the disturbed family backgrounds previously mentioned, have become past masters at the art of playing off one person on the staff against the other. The boys have considerable ability to sense differences of opinion among staff members and have an equal ability to play these differences for all they are worth. It has been apparent from time to time that an insecure staff really perpetuates the boys' difficulties by falling for this type of boy's story.

In past years, and indeed still in certain localities, the public felt that the proper treatment of delinquent children consisted of training them to make a living, educating them, and all would be well. Although we consider that learning a trade and education are an integral and very important part of our program, we recognize that individuals do not learn well or work well when they have severe emotional disturbances. Old phrases such as "Open a school and you close a prison" may have had a place at one time, but we now suffer the remnants of this type of orientation. We have found it increasingly satisfactory to work with our educational personnel in remedial teaching. Attempting to understand learning difficulties in the light of emotional disturbances has proved especially profitable. Unfortunately, there are practically no teachers in remedial work either in public or private schools. There is a strong need, we feel, for teachers to receive more dynamic concepts of human behavior and the psychology of learning in their education and a greater emphasis on mental health.

#### Management of Institutional Personnel

In an institution such as ours, the staff is comprised of people with very dissimilar backgrounds. They come from different cultural, educational,

economic, vocational—and perhaps most important—different emotional backgrounds, and they bring a variety of complex theories, hypotheses, ideas, hunches, and prejudices into play in the practice of their respective specialties at the school. With this dissimilar staff it is obviously necessary to meet many of these problems by in-service education, as well as educating staff members who are apt in their respective fields outside the institution.

One finds it extremely difficult to introduce the psychological point of view to those who have viewed delinquency as purely a moral offense for their entire lives. Many staff members in this latter group find themselves insecure and under considerable emotional strain when a treatment program is instituted which seeks to understand the child on the basis of his past experiences and psychological needs. The staff finds it extremely difficult to view the boys as individuals and to react to them individually if they have to care for a group of 35 to 50 boys at one time. Many staff members are constantly hoping that an approach will be found which they can mechanically employ, i.e., an approach which will be effective in dealing with all delinquents in all situations.

Those staff employees who cannot accept this approach may withdraw from time to time and are apt to feel that their work is threatened and view the situation in a very "judgmental way."

#### Conclusion

We wish to state that although these problems are old they face us continually and we have presented them to remind Kansas psychiatrists that we have duties and responsibilities in many areas. The KBIS is meeting many of these problems and we invite your interest in helping us solve these problems.

#### Bibliography

1. Noyes, Arthur P., *Modern Clinical Psychiatry*, 3rd edition. Philadelphia, W. B. Saunders Company, 1948.

### NEW A.M.A. DIRECTORY

A copy of the A.M.A. directory for 1950, the first published since 1942, has been received at the Executive Office. Information from the directory will be supplied upon request. Physicians interested in securing their own copies, at \$25 each, may order them from

Fellowship, Membership and Subscription Department  
American Medical Association  
535 North Dearborn Street  
Chicago 10, Illinois



# The Care of Hand Injuries\*

Committee on Trauma  
American College of Surgeons

## Traumatic Amputations

I. *Protection of the Hand* (Abstract of Article I). The first-aid care of wounds of the hand is directed fundamentally at protection. It should provide protection from infection, from added injury, and from future disability and deformity. The best first-aid management consists in the application of a sterile protective dressing, a firm compression bandage and immobilization by splinting in the position of function.\*\* No attempt should be made to examine, cleanse, or treat the wound until operating room facilities are available.

II. *Requirements of Early Definitive Treatment* (Abstract of Article II). Early definitive care requires thorough evaluation of the injury with respect to its cause, time of occurrence, status as regards infection, nature of first-aid treatment and appraisal of structural damage. For undertaking the definitive treatment the conditions required are a well-equipped operating room, good lighting, adequate instruments, sufficient assistance, complete anesthesia and a bloodless field. Treatment itself consists of aseptic cleansing of the wound, removal of devitalized tissue and foreign material (exercising strict conservation of all viable tissue), complete homostasis, the repair of injured structures, protecting nerves, bones and tendons and providing maximum skin coverage, and the application of firm protective dressing to maintain the optimum position. After-treatment consists of protection, rest and elevation during healing and early restoration of function by directed active motion.

III. *Surface Injuries* (Previously published).

IV. *Lacerated Wounds* (Previously published).

V. *Fractures and Dislocations* (Previously published).

VI. *Open Fractures* (Previously published).

VII. *Traumatic Amputations*. The loss of part of the hand by injury may result from cutting, tearing or crushing wounds. Such injuries almost invariably produce one or more open fractures. There are often associated injuries of the remaining parts of the hand. Such injuries require appropriate treatment, as outlined in previous articles.

The purposes of early treatment of traumatic amputations are:

- (1) To relieve pain, control hemorrhage and combat shock.
- (2) To conserve all viable tissue possible.
- (3) To prevent or control infection.
- (4) To secure the maximum restoration of damaged structures.
- (5) To secure healing at the earliest possible time.
- (6) To restore the injured hand to maximum usefulness.

These objectives are sought by:

### A. First-aid treatment

1. All tissues not actually severed from the hand should be retained. Without attempt at cleansing or the application of any antiseptic, a voluminous sterile dressing is applied and bandaged with firm, even pressure. The hand is immobilized by splinting in the position of function and kept elevated.

2. The pressure dressing will usually suffice to control the loss of blood. If it does not and free hemorrhage persists, the use of a tourniquet, properly applied, may be necessary. This should not be left in place more than forty-five minutes.

3. Appropriate measures should be taken to control pain and combat shock.

Proper conditions for definitive treatment should be sought at the earliest possible time (See Article II).

### B. Definitive treatment

Under operating room conditions and following x-ray study of the hand with first-aid dressing in place, the following measures of definitive treatment are appropriate:

1. Cleansing of the injured area and evaluation of the injury under pneumatic tourniquet hemostasis if necessary (See Article IV, *Lacerated Wounds*).

2. Arrest of hemorrhage by ligation of injured vessels.

3. Thorough but gentle removal of foreign substance and excision of devitalized tissue, sparing all that may live (See Articles IV, *Lacerated Wounds* and VI, *Open Fractures*).

4. Repair, as far as practicable, of damaged structures and reduction of fractures and dislocations. This repair should aim particularly at the protective covering of bones, tendons and nerves. Maximum

\*This is the seventh of a series of articles on "The Care of Hand Injuries." This material is prepared by the American Society for Surgery of the Hand and is distributed by the Committee on Trauma, American College of Surgeons, through its Regional Committees.

\*\*Position of function or position of grasp: wrist hyperextended in cock-up position; fingers in mid-flexion and separated; thumb abducted, slightly forward from hand and slightly flexed.

skin coverage should be provided at once by

- a. Utilization of local skin,
- b. Free split-thickness grafts, or
- c. Employment of an abdominal or thoracic pedicle graft.

Where skin loss is extensive, or in stripping or denuding amputations of digits (especially the thumb) leaving bone exposed, the application of a pedicled skin graft is desirable.

Local skin should not be employed if the preparation of flaps requires further amputation or sacrifice of living bone. Thus, the stump of an amputated digit should be left at full length and be covered by appropriate graft, either immediate or delayed. Sacrifice of finger length by formal re-amputation is to be condemned.

Partially amputated parts of digits should be retained and lightly sutured in place with skin stitches only. Many will survive and may subsequently be restored to usefulness.

5. Retention of reduced incidental fractures or dislocations by appropriate splinting or fixation (See Articles V, Fractures and Dislocations and VI, Open Fractures).

6. Application of firm pressure dressing, the hand (except when fixed to the body for grafting) being splinted in the position of function.

7. Administration of tetanus toxoid or antitoxin and antibiotic drugs.

C. Subsequent care

1. Dressings.

Unless evidences of infection develop, the dressing should be left in place for a sufficient time to permit healing of initially closed wounds or the firm taking of grafts (seven to 10 days). Coincidental fractures require additional periods of immobilization to assure union (See Articles V, Fractures and Dislocations and VI, Open Fractures).

2. Surface healing.

If skin coverage has not been completed at the time of initial definitive treatment, or if grafting has failed, preparations should be made to place or replace skin grafts at the first post-operative dressing. Denuded areas should be given skin coverage at the earliest possible time.

3. Restoration of form and function.

When healing is complete a program should be developed and prosecuted for

a. Restoration of function by exercise and occupational retraining.

b. Reconstructive surgery to render the hand remnant as useful as possible, or

c. Preparing the stump for prosthesis.

## Kansas Medical Society Annual Meetings

1951

May 14-17

TOPEKA, KANSAS

1952

May 5-8

KANSAS CITY, KANSAS



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## SERVICE NOTES

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Major General Lewis B. Hershey, director of the Selective Service System, set January 15, 1951, for the registration of those physicians, dentists and veterinarians who fall in priorities three and four of Public Law 779 and those who fall in priorities one and two who have failed to register previously. Registration will be a simple procedure amounting to visiting the local Selective Service board and signing a card. Questionnaire forms 100 and DD form 390 will not be made out on this date but will be mailed to the registrant at a later time. Physicians away from home on this date may register at any Selective Service board.

All physicians who have not reached their 50th birthday on January 15, 1951, and who have not registered previously under Public Law 779 and who are not members of the reserve corps of any branch of the services must register on January 15.

According to Public Law 779 registration and induction of physicians to the extent that the President shall consider practicable and desirable shall be in the following order: first, those physicians who participated as students in the Army or Navy training programs and those who were deferred during World War II to complete their education and who have had less than 90 days active duty; second, those physicians who were trained by the Army or Navy and those deferred to complete their education who have had 90 days but less than 21 months active duty; third, those who did not have active service in the Army, the Air Force, the Navy, the Marine Corps, the Coast Guard or the Public Health Service subsequent to September 16, 1940; fourth, those not included in the first and second priorities who have had active service subsequent to September 16, 1940. Under category four induction shall be made according to the number of full months of active service with the physician having the lesser number of full months of service being inducted prior to the physician having a greater number of full months of service.

The January 15 registration is for those who are in priorities three and four, but any physician of priorities one and two who has failed to register under this special act must do so on that date.

Many questions have been asked regarding the classification of physicians by local Selective Service boards. It is the purpose of Selective Service to require most physicians to take a physical examination. Classification will be made on the basis of the results of the examination together with any data available concerning the essential nature of his practice. Local advisory committees should bring

to the attention of the local draft board any instances of physicians who are urgently needed by their communities. If this attempt is not successful in obtaining a deferment for the physician involved, the State Advisory Committee under the chairmanship of Dr. L. R. Pyle, 512 New England Building, Topeka, Kansas, should be notified.

Many newspaper accounts of the medical situation in local communities have suggested that individual doctors will shortly be inducted into the service. This is presumed because of the procedure employed under the general Selective Service Act, but is not the case under the special act applying to physicians. Under the general act, the physical examination is given just prior to induction. Under the special act the physical examination is given prior to classification. The fact that the physician has taken his physical examination is not indicative of an immediate call. In fact, Kansas has not yet received a quota of physicians to be taken under the draft act. It is presumed that the first call will be made at the moment when voluntary reserves drop behind Army requirements. There have been no figures issued to indicate how near this might be. In the meantime, reserve commissions may still be applied for and, if completed prior to the receipt of an induction notice by the draft board, the physician will be entitled to the additional \$100 a month bonus.

Some have wondered about the Soldiers and Sailors Relief Act of 1940. This was amended in 1942 and is still in effect. It can provide temporary or long range relief for service men from installment contracts on household goods, automobiles and personal property; mortgages on home or business loans (V.A. included) or homesteads; premium payments on commercial insurance policies (National Service Life Insurance is not covered) and rent payments for housing occupied by the servicemen's dependents.

Anyone interested in this protection should obtain legal advice and apply for coverage under the act. This must be done on an individual basis as coverage is not obtained unless specifically applied for. Further details of the provisions of this act are involved. It is therefore recommended that anyone interested consult an attorney for specific information.

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### Trade Name for ACTH

The Armour Laboratories' ACTH, which is non-allergenic and free of posterior pituitary factors, is now being marketed under the trade name of Acthar, according to recent announcement. It can be dispensed by or on the prescription of a physician and is now available for ambulatory patients.

## PRESIDENT'S PAGE

Dear Doctor:

The 1951 session of the Kansas legislature brings to Topeka for three months some of the finest minds and most public spirited citizens in our state. They come from all walks of life, the professions, business and agriculture. They are contributing a vast amount of time at a personal sacrifice to an exacting and responsible task. Their work, frequently thankless, is directed toward the improvement of Kansas in every activity, for peace or war.

It is only natural that strong personal opinions, sectional interests and the background of individual experience should create differences of opinion. These result in varying proposals for legislative action but in almost every instance the motivation stems from an honest desire to provide improvements for the people.

Health is one of the technical problems the average legislator finds baffling. Examine the emotional plane on which the question of osteopathy has been debated during many previous sessions. It seems proper to review these issues on a calmer basis, to see the problem in a logical sense, to analyze the controversy with a scientific approach. You will find it simple, something like this:

The legislature long ago set standards for the practice of medicine and surgery. These were imposed not for the benefit of any individual or profession but for the protection of the public against unqualified practitioners. No one wants different standards covering a single subject so the entire controversy revolves around whether osteopathy meets these standards.

The truth is that we do not know. Neither does the legislature but everyone could easily find out if an impartial and scientific comparison of osteopathic and medical education would be made. If their schools are equivalent to grade A medical schools, their graduates should then be eligible to the same rights and be governed by the same responsibilities that are given the medical profession. If their training proves less, their privileges and their duties should be restricted. All other details would be solved without serious conflict.

With very few exceptions the members of the legislature have the average layman's view of this problem. They approach it in the light of their personal experience, whatever that has been. Your legislator and your Senator can obtain your views only if you will inform him, and as a good citizen who is concerned about the health of the people in Kansas it is your responsibility and mine to give him the benefit of our experience on this subject.

Sincerely yours,

A handwritten signature in cursive script, reading "J. R. Croson M.D.", written in dark ink.

President.



## EDITORIAL COMMENT

**You May Not Agree—But**

You may not agree with the statements in this article, but we hope that you read them and think a little about them.

The organization of medicine into its component societies is an interesting study. Let us begin with the individual practitioner of medicine. He is individualistic. He has gone through many years of study and preparation, and for many these were years of privation, in order to be his own boss. From the onset, his goal was idealistic—the care of the sick and the prevention of disease. He and his associates have banded together into small groups to further their purposes. The first organizations in medicine were entirely for scientific purposes. Their local groups have coalesced into larger groups, such as our Kansas Medical Society. The state organizations in turn have banded together into the American Medical Association. Thus, no one can become a member, a fellow, a delegate or an officer of the American Medical Association who is not a member in good standing of his own local organization. Thus the American Medical Association has the broad stalwart base of its grass roots components, with the strong supporting timbers of the state organizations pyramiding to a small but powerful democratic organization at the top composed of the House of Delegates, the officers and the Board of Trustees.

Medical organization first confined itself to its own intellectual ideals, and we are sure that no one of you would question the great strides in medical education, hospital standardization, public health, sanitation, pure food and drugs, etc., that have been made under the wise direction of our individual leaders of medicine and our medical organizations.

The first entrance of our organizations into the political field was for the protection of our populace, boards of health, pure food and drug laws, medical practice acts, the care of the chronically ill, the raising of standards of education and so ad infinitum. We can point with pride to our results.

Our most recent ventures into the political field are in the scope of preventive medicine, but there are many of our opponents who would like to have our citizens think otherwise. It is almost beyond the realm of our imaginations to think that in a country like ours, founded on the principles of individual and free enterprise, that in 10 or 20 years the healing art to the masses of our people would be practiced on an assembly line basis, under the direction and paternalism, not of those schooled in the prevention, diagnosis, treatment and cure of disease, but under those whose lust for personal

power is so great an intoxicant that they cannot see the road because of the glittering reflection of their own ego.

And so for the past few years the attention of many of the brilliant men of medicine has, by necessity, been forced to turn from problems concerned with the care and welfare of the sick in a medical sense to the economic problems of the care of the sick. For the past few years the American Medical Association has made careful studies of the varying economies in medical care as opposed to compulsory health insurance—yea, socialized medicine under an assumed name, subsidized by the federal government and supported by some form of wage deductions, all deficits to be paid out of revenues from taxation. And now, since the federal government is not able to live within its yearly budget, is it in a position to finance another project, the cost of which no country yet has been able to estimate in advance?

A year or so ago the American Medical Association decided to launch upon a national educational program, beamed to the citizens of the United States who believe in the four basic freedoms upon which this country is founded and whose minds have not been poisoned by the empty promises of federal paternalism, so that they, the people, might write their own ticket at the polling places of America. It would seem to us, skeptic though we were at first, that the results of the November election justifiably demonstrated the wisdom and the foresight of our leaders in American medicine.

On December 6, 1950, Dr. Louis Bauer, chairman of the Board of Trustees of the American Medical Association, announced to the House of Delegates the decision of the Board of Trustees to divert \$500,000 of its National Education Campaign Fund to the 79 Class A medical schools of the United States for their unrestricted use in furthering medical education. This is a master stroke, unprecedented in the annals of organized medicine, and will do much to cement our friendly relationships with the thinking people of America.

You may not agree—but for many years you have been basking in the beneficial rays of the efforts of the American Medical Association and other medical organizations with very little cost to you. For instance, less than 50 per cent of the members of the Kansas Medical Society have paid the \$25 membership fee of the American Medical Association for 1950. We stand 48th in the list of the states of the union.

You may not agree—but demands of organized medicine upon the time and finances of the average



member have been small, but to a few of our members have been great.

You may not agree—but we are sure that there is no doctor in Kansas, after he has carefully analyzed the benefits that he has derived from the county medical society, the Kansas Medical Society and the American Medical Association, and the committees and representatives thereof who are working for improved medical care and the preservation of the freedom and principles of the private practice of medicine, who is not willing to bear his share of the burden both financially and intellectually.

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### Syphilis Therapy

A medical journal recently reviewed the literature of the past half dozen years on syphilis and presented a summary of this material. Of course most of the discussion concerned penicillin and its usefulness in the treatment of this disease.

It is now seven years since the first use of penicillin to treat syphilis. There has rarely been a drug so universally and enthusiastically accepted in the treatment of any disease as has this. It also appears to be standing the test of time, although some years must yet elapse before its ultimate value can be determined. Improvement has occurred during this interval in the method of administration, but optimal dosage schedules are still lacking. So also is much other information about syphilis.

Laboratory tests have improved only slightly. There remain the baffling contradictions of the occasional false positive reactions. The various strains of *Treponema pallidum* differ in their resistance to penicillin therapy by as much as 500 per cent, but they are difficult to identify according to type. The question of reinfection versus relapse remains unsolved, and there are many more.

There seems little doubt, however, that penicillin has proven to be the most effective known agent in the treatment of syphilis. Many who formerly used penicillin only in conjunction with the established metallic substances have now discarded the older forms of treatment to use penicillin alone. It should be stated, however, that this is not a universal opinion, that some syphilologists still use the newer drug in combination with the old established forms of treatment. With the advent of procaine penicillin and the generally accepted dosages of four and one-half million to six million units, administered in 15 days, early infectious or early latent syphilis has been cured in 80 to 90 per cent of the cases. Late benign syphilis will generally respond to the same amount, but visceral disease is less responsive. Neurosyphilis requires up to 12 million units, ad-

ministered in a period of three weeks, and the most severe parenchymatous forms need fever therapy in conjunction with penicillin. The schizophrenic type of dementia paralytica is the most difficult of all forms of syphilis to control. A satisfactory treatment schedule for interstitial keratitis is still to be determined. The unborn child of a pregnant syphilitic woman can almost invariably be protected from the disease by four million or five million units of penicillin. The determining factor in congenital syphilis is early treatment, preferably before the age of three months.

Penicillin shows promise as a prophylactic measure when administered shortly after exposure. In all the above categories clinical experience has been encouraging, but there still remain a considerable percentage of persons who react unfavorably to penicillin or in whom the drug apparently is not effective. In these instances, until something else is found, the old standard methods of treatment must be employed.

Much research has been done with reference to the use of other drugs, especially aureomycin. Early results are encouraging, but further experiments must be completed before it may be considered successful. Aureomycin can be used for penicillin sensitive patients. It is convenient because of oral administration, but practically 100 per cent of the patients using this drug over an extended period have suffered gastric disturbances of various degrees of intensity. The optimum dosage and the proper time intervals are yet to be determined. In the light of present information it appears that this agent will have its greatest value as an adjunct to penicillin therapy. Other drugs currently receiving attention are chloramphenicol and bacitracin, but both are still in the laboratory stage of development.

The above brief summary represents a condensation of the literature of the past six years. There is no universal agreement on any phase of the problem, but by an overwhelming majority the authors writing during this period have voiced their approval of penicillin as the treatment of choice for syphilis. In some forms best results are obtained when penicillin is combined with other forms of therapy. A note of caution is still present in most articles, but in general the results obtained through the use of penicillin appear to be better than was possible earlier. The next few years should provide conclusive evidence.

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### Socialized Medicine Is No Bargain

A half hour of historical importance occurred from 4:00 to 4:30 p.m. on December 7, 1950. The occasion was an address over the American Broadcasting Company's network originating out of Cleve-

land. The event was held in connection with the midwinter meeting of the American Medical Association.

Mr. William L. Hutcheson, general president of the United Brotherhood of Carpenters and Joiners of America and vice president of the American Federation of Labor, prepared an address, "Socialized Medicine Is No Bargain." Because of his illness Mr. Hutcheson authorized this paper to be read and broadcast by his assistant, Mr. Peter E. Terzick, editor of "The Carpenter." A portion of this memorable statement appears below.

"Socialization and death have one thing in common; you cannot be either a little bit socialized or a little bit dead. It is whole hog or nothing. After two years of the National Health Program, London doctors still have preferences as to where they want to practice. By compulsion of one kind or another, somebody is going to have to shoo doctors away from the fancy neighborhoods into the tenement districts or the program will wind up where it started. When the government is given authority to tell one group or one profession where and how its members are to work, no other group or profession can be safe for long.

"If the day ever comes to America when Uncle Sam usurps the power to dictate to doctors under a health plan, it will be a sad day for carpenters. Adequate housing is still an unsolved problem in this country, especially for the poor. If it is logical to nationalize the medical profession to get more medical service for the poor, it is equally logical to nationalize the home construction industry to get roofs over the heads of the lower income groups.

"I do not know much about doctors, but I know quite a bit about carpenters. They are an independent lot. They want to work where and how they please. The first bureaucrat who told a carpenter he had to work in Little Rock when he wanted to work in Lancaster would be gumming his food for lack of teeth. Carpenters want to be free agents; free to work where they want to; free to negotiate the terms of their wages and working conditions through collective bargaining; yes, even free to leave the industry and try their luck at something else if the spirit moves them.

"They will retain these freedoms only so long as all other groups retain theirs. Socialization is like a wolf with a tapeworm; once it starts gnawing, it never can stop. Socialized medicine would only be the first bite out of our free enterprise system; it would not be many years before the carpenters would be feeling the teeth of socialization on the seats of their overalls. Any way you look at it, socialized medicine is no bargain and the carpenters want none of it.

"I know that the backers of the national health

plan in this country resent the term 'socialized medicine.' They have all sorts of arguments to 'prove' that doctors and patients will remain free as the air under their program. They make a strong case. Perhaps if human nature were less ornery and less avaricious, an idealistic health program might work out all right. But so long as people have preferences, so long as Park Avenue has more appeal than Hell's Kitchen, there will be an uneven distribution of doctors under any plan that does not contain compulsion. And once compulsion enters the picture, the rights and freedoms of all citizens stand in jeopardy. To me, it is as simple as that. For forty years, I have fought communism tooth and toenail because I do not want anyone pushing me around. I certainly do not want to put my head into a socialization noose voluntarily when the results can be as undesirable as communism.

"I have always respected the medical profession for the fine contribution American medicine has made to human welfare. As I watched your battle against regimentation during the past two years, I have added to that respect. The physicians of this country have shown that they are willing to fight for their conviction. I salute you today not only as doctors but as crusading citizens as well. We in the labor movement have our own cross of regimentation to bear. The fight you are making is part of the same war. It is a war against concentration of authority in a few hands in Washington. As a veteran of forty years in the labor movement, I know what it is to fight for human rights. I am happy to take my stand beside you."

### Atlas of Pathology Published

The Color Atlas of Pathology, completed after six years of work by the Naval Medical School at the National Naval Medical Center, Bethesda, Maryland, was published recently by the J. B. Lippincott Company. It provides a standard of comparison for study and interpretation of both gross and microscopic findings in pathology, and will be valuable in supplying an adequate background in pathology to students.

The volume covers hematology, spleen and thymus, lymph nodes and tonsils, the respiratory system, the liver, oral cavity, gastrointestinal tract, heart and blood vessels, kidney and urinary tract and the skeletal system. A second volume, dealing with pathological conditions peculiar to the specialties, such as neuro-pathology, will probably be ready for publication in 1953 or 1954.

Make hotel reservations now for the 92nd annual session of the Kansas Medical Society, to be held at Topeka, May 14-17, 1951.



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## SOCIALIZED MEDICINE

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*Editor's Note. This is the 17th of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

A recent pamphlet from the National Federation of Independent Business, Inc., provides some interesting figures showing what we have in America in contrast with what is possessed by the rest of the world. The pamphlet begins with the following words: "Before urging change in our form of government, first make a few comparisons. No nation on earth, regardless of its form of government, ever gave to human beings so much liberty and material prosperity as our constitutional form of freedom. We started out as 13 little states, ridden by poverty and threatened by savages. We were, however, blessed by God. We now represent the utmost in individual freedom and individual prosperity. Compare our United States with any other land on earth. The workingman here is a king compared to the workingman in any other country. Nearly all of us have modern homes—electric lights and power—gas cooking—telephones—automobiles—automatic refrigeration—electric washers and irons—radios—insurance policies. Most of us own bonds and have money in the bank, plus a thousand and one other conveniences and luxuries.

"Are we ready to exchange all this for the crazy promises of some foreign crackpot? Isn't it time for us to thank God for America and our many blessings? Isn't it about time that we wake up and do a real job, selling American principles?"

The following figures, according to the pamphlet, are statistics from the United States government. One table compares land area and population as follows. The United States has seven per cent of the world's population and six per cent of the world's land area. Russia has 8.8 per cent of the world's population and 14 per cent of its land. In Great Britain the figures are 2.2 per cent and 0.17 per cent. France, Sweden and Italy are also given, but each has lower figures than those for the three nations listed above.

With that background it will be of interest to know that one of every four persons in the United States has an automobile. In Russia the ratio is one for 252; Great Britain, one for 22; France, one for 18; Sweden, one for 29; Italy, one for 93. Equally dramatic are the figures showing the use of electric power, with the United States using 46.2 per cent of the total world electric power. Russia is estimated

at five per cent, Great Britain at six per cent and the other countries using less.

If these figures are reliable the United States has 1,749 daily newspapers; Russia, 28; Great Britain, 150; France, 85; Sweden, 135; Italy, 16. We have 30 per cent of the world's railroad mileage, 40 per cent of the telegraph wire mileage. Russia has 6.2 and 11 per cent respectively. Great Britain has three per cent and 4.3. The ratios are similar on other commodities such as radios, which we have at a rate of one for three persons, and telephones, which is one for five. In Russia there is one radio for 45 and one telephone for 188. Great Britain has one for five and one for 156; France has one for nine and one for 27; Sweden, one for five and one for six. In Italy there is one radio for 43 persons and one telephone for 72.

Another table contrasts the hours of work required for the purchase of certain commodities in the United States and Russia. A person will buy the daily food for five people in the United States for three hours work. It takes nine hours in Russia. One hour's labor in the United States will provide a pair of cotton stockings. Twenty-four hours are required in Russia. A cotton shirt costs three hours labor here but 320 hours in the Soviet Union. A toothbrush can be earned in 15 minutes in this country as compared with four hours over there. A wrist watch is worth about 30 hours labor in the United States but requires 1600 hours in Russia. You can get a bottle of beer for 10 minutes effort in the United States but will work eight hours for that in Russia.

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## BLUE SHIELD

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### Low Income Group

Much of the philosophy and planning of the Blue Shield program is based on consideration for people in the so-called low income group. In fact most physicians feel that the Blue Shield was started primarily to provide a convenient prepayment plan so that people with low and modest incomes could prepay some of the medical and surgical needs. The service feature of Blue Shield is limited to families having annual incomes of \$2,400 and less and single people having annual incomes of no more than \$1,800. In 1946, when these income levels were set, they would have perhaps included a substantial portion of our people. There is very little information in Kansas on the distribution of income, that is, on what per cent of people earn what levels of income. Efforts to secure this information from the income tax bureaus, both federal and state, have been unsuccessful. However, information available through the Bureau of Labor Statistics shows that the average



wage in Kansas today is something over \$3100 per year.

It seems appropriate to reflect upon the situation of the low income group in regard to Blue Shield. It is doubtful that Blue Shield has many members who fall within the service category. There may be two reasons for this.

1. It is not likely that a large percentage of people in the state have earnings below these figures.

2. Not many of the people who do have earnings below these figures would feel that they could afford to prepay for hospital, medical and surgical care.

Let's look at a minimum budget for a family of husband, wife and two young children. Figures secured from the Department of Welfare indicate that a minimum budget for such a family on relief would be set at about \$153.95 per month. However, since we are considering a working family this minimum budget should undoubtedly be increased somewhat. The following budget is suggested as being pretty close to minimum.

	<i>Per Month</i>
Rent .....	\$ 45.00
Food .....	80.00
Clothing .....	20.00
Fuel .....	10.50
Electricity .....	3.00
Water .....	1.00
Incidentals .....	10.00
Medical Expenses .....	7.50
Dental Expenses .....	5.00
Transportation .....	5.00
	<hr/>
	\$187.00

While the above budget was not scientifically worked out, it would seem upon analysis that our working family could not get along on much less. This would leave a family of four earning \$2,400 per year only \$13.00 per month to cover numerous other problems, not to mention some amusement as being necessary.

It would not seem likely that many such families would be inclined to pay an additional \$4.70 per month for possible hospitalization and medical needs. Indeed, the economic factor is so influential that it would seem that in such a low income bracket those who do decide to join Blue Cross-Blue Shield are relatively poor health risks.

It may be well for us to face the fact that Blue Shield as currently set up is not designed to reach the so-called low income group. In fact it may be that the families in the income category of \$200 per month and under cannot be reached through prepayment in today's scale of living costs. If these conclusions are any way near the truth there is

logic for saying that the service feature in Blue Shield is in reality without much meaning except to certain single people and childless married couples.

There is a good deal of evidence around the state that doctors have been thinking along these same lines and we have had a number of requests from physicians for Blue Shield to begin a re-examination of its service feature for the low income group.

There are many who say that the service feature is important as a public relations move on the part of the medical profession. When the service feature is realistic it gives tangible evidence to the people that the medical profession is working out a constructive way for people to meet the cost of medical care.

One of the projects before the Blue Shield Relations Committee during the coming year will be the careful consideration of this important question.

#### Licensure on Individual Basis

Applications for medical licensure in Kansas after January 1, 1951, will be considered by state endorsement on an individual basis, according to an announcement made recently by Dr. O. W. Davidson, secretary of the Kansas State Board of Medical Registration and Examination. That decision was made December 13, 1950, at a meeting of the board held at Topeka. The following resolution was passed.

"That the State of Kansas has heretofore had reciprocal agreements with various states pertaining to licensure to practice medicine and surgery in the State of Kansas. That all such reciprocal agreements which have heretofore been adopted and enforced between the State Board of Medical Registration and Examination of the State of Kansas and other state licensing boards are hereby cancelled effective the first day of January 1951.

"That in the future all applicants for licensure to practice medicine and surgery in the State of Kansas who are regularly licensed by examination by any other state licensing board maintaining equal practice privileges, will be considered on an individual basis.

"That a license to practice medicine and surgery may be granted by the State Board of Medical Registration and Examination without examination to any applicant who, at the date of the original license issued, has fully conformed to the educational and licensure requirements of the State Board of Medical Registration and Examination of the State of Kansas."

The best way to make your dreams come true is to wake up.—J. M. Power.

## Case Report from the University of Kansas Medical Center

## Superior Vena Caval Obstruction from Ruptured Aneurysm

## CLINICAL PATHOLOGICAL CONFERENCE

Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, roentgenology, and the junior and senior classes of medical students.

## Case Presentation

A.M., a 57-year-old colored female, was admitted to this hospital April 8, 1950, with the chief complaints of swelling of the face, neck, arms, hands, and breasts, and a choking feeling. She died on April 15, 1950.

The patient was fairly well until one week before admission when she suddenly noticed the onset of the swellings, progressive from that time. She had to stop work, and had to spend part of the time in bed. She also had pain in the upper right chest and tenderness over the upper back and chest.

The patient had had flu and pneumonia. There was an indefinite history of tuberculosis. She had had no pregnancies. Family history was non-contributory. System review revealed dizziness and blurring of vision, nasal congestion and some decrease in appetite for one week prior to admission. Hypertension was known to exist for two years prior to admission with some exertional dyspnea and occasional ankle edema during the last year. She had occasional pains in the chest which were sufficient for her to stop work.

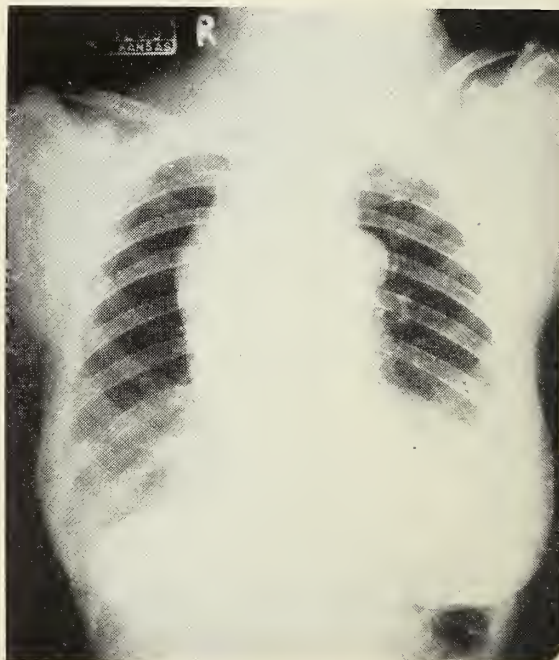
Physical examination showed a colored female in acute distress. There was considerable edema of the head, neck, arms, hands, upper chest, and breasts but no edema from the waist down. The eye

lids were edematous. Pupils were round and equal and reacted to light and accommodation. The nose was obstructed. Neck veins were engorged as were superficial veins over the upper thorax and back. Small lymph nodes were palpable in both axillae. Lungs were clear to auscultation. Dullness was noted to extend approximately three cm. to the right of manubrium. P.M.I. was in the sixth interspace anterior axillary line. Rhythm was regular with a rate of 110. A harsh systolic murmur was heard at the mitral area as well as a loud blowing to-and-fro murmur over the aortic area, transmitted both downward and into the carotid. Blood pressure was 110/70. The liver was palpable six cm. below the costal margin but not tender. Spleen was not palpable. The patient also had a brassy character to the cough.

Laboratory examination: The urinalysis showed a specific gravity of 1.025, loaded with amorphous urates. Red blood count was 2,550,000, hemoglobin 59 per cent (9.2 gms.), white blood count 7,850, polys 79, lymphs 20, and eosinophiles one. Sedimentation rate was 22 mm. per hour. The serology was 256 Kolmer units, 128 Kahn units. The EKG showed T wave inversion in all chest leads. Fluoroscopy and x-ray of the chest showed a large media-



1. Prominent engorged superficial veins of the back.



2. Chest x-ray, showing mediastinal widening and congestion of pulmonary bases.





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stinal mass occupying the upper two-thirds of the anterior mediastinum, continuous with the aorta; however, a definite pulsation could not be seen. Lobulation of the mass was noted. Cardiac silhouette was within the normal limits in size. Pulsation was forceful. Lung fields were clear. A kymograph showed only small amplitude of the mass.

Hospital course: The patient was placed on absolute bed rest and a low sodium diet. She was digitalized rapidly with digitoxin and given one cc. of mercurhydrin on admission. She was started on ammonium chloride; however, she developed some nausea and vomiting on April 9 which necessitated discontinuation of the digitoxin and ammonium chloride. She was given an additional 0.15 mg. digitoxin on April 14. She received thimerin on two occasions, but despite use of diuretics the edema of the face and arms progressed. Because of poor fluid intake it was necessary to give parenteral fluids on several occasions. She was given an x-ray treatment on April 15 to the mediastinum. On this date she had considerably more edema, and the eyes were swollen shut. She became irrational and restless. At 1:40 p.m., April 15, she ceased respiration.

Dr. Delp: Are there any questions of Dr. Durkee?

Question: Was any tracheal tug noted?

Dr. Durkee (Resident in Medicine): There was no tracheal tug evident. Of course it would be rather hard to feel because of the tremendous increase in size of the neck.

Question: Was there any inequality of the pulse?

Dr. Durkee: No, pulses were similar in both arms. The blood pressure was equal in both arms. There was no elevation of blood pressure.

Question: What was the venous pressure?

Dr. Durkee: The venous pressure was not done. It was quite obviously much elevated in the upper extremities.

Question: Prior to the onset of the edema, was there any weight loss?

Dr. Durkee: There was no history of weight loss. The patient had always been very small.

Question: Was there any cervical lymph adenopathy?

Dr. Durkee: There was a large lymph node in the axilla, but we did not feel it would be accessible for surgical removal because of the marked edema.

Question: Was the temperature elevated?

Dr. Durkee: No elevation of temperature was observed. It was 99.4°F on one occasion only.

Dr. Delp: One of the reasons we chose this case was because of the rather unusual, but nevertheless fairly diagnostic, physical findings. The edema and distended superficial veins on the back were especially striking. This is a perfect demonstration of certain physical findings invariably pointing to this syndrome.

Dr. Cochran (Medicine): The EKG shows in the three standard leads that there are slightly depressed ST segments. There are inverted T waves in Lead 1, a slight depression of the ST segment in Lead 2, but Lead 3 is not definitely abnormal. At this time the rate was about 65. The ST segment changes were the only definite abnormalities in the three standard leads.

The chest leads are not abnormal except for the ST segment changes present, which would simply suggest myocardial changes. We do not see any EKG evidence of marked hypertrophy in either ventricle.

Another feature that should be mentioned is that gross edema would reduce reliability of many EKG findings.

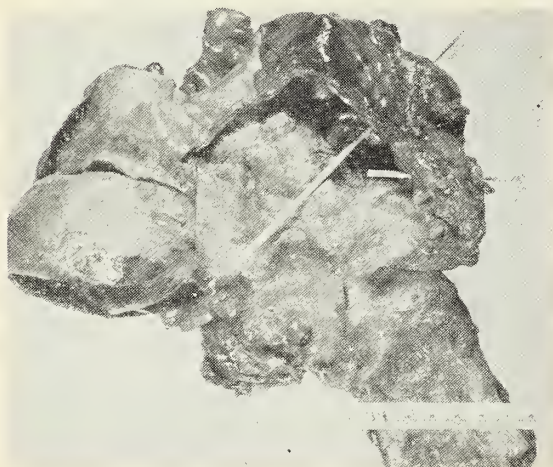
Dr. Delp: Were these tracings taken before the patient received digitalis?

Dr. Durkee: No. She had already received digitalis.

Dr. Cochran: In that case, of course, the ST segment changes would be based partly on the effect of the digitalis.

Dr. Tice (Roentgenology): The films show a mediastinal mass of, or adjacent to, the lower part of the aorta. We attempted to distinguish a separation of the mass from the aorta in order to differentiate an aneurysm from a mediastinal tumor. We could see no separation of the mass from the aorta. Bucky films still did not separate the mass from the aorta.

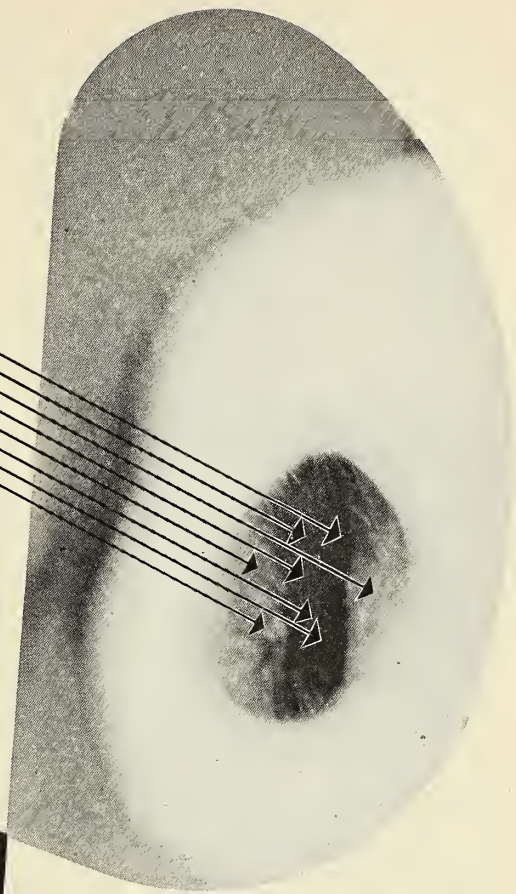
We were intrigued with the fact that the mass was somewhat lobulated in a manner often seen in a lymphoblastoma. At first we couldn't see an ap-



3. Aneurysm showing rupture into the superior vena cava (the short marker is in the innominate artery. The long marker extends from the aorta into the superior vena cava, through the site of the rupture).

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preciable pulsation in the area of the mass. Our kymograph showed a little pulsation. This didn't necessarily mean anything as a mass against the aorta can show transmitted pulsation which must be differentiated from expansile pulsation.

Our final diagnosis of this, as reported here on the chart, was an aneurysm. We also entertained the diagnosis of a highly anaplastic type of tumor which might respond to x-ray.

#### Differential Diagnosis

Mr. McEwen (Student): Apparently today we have a case of superior vena caval syndrome. This woman had lues. The sudden onset of this typical picture of swelling of the upper extremities, arms, hands, face, breasts, shortness of breath, cough, and pain show everything you would expect except perhaps cyanosis. With the x-ray findings and physical findings of a mass in the mediastinum, one wonders as to whether it might be an aneurysm and the sequence due to a complication of the aneurysm. This could be due to pressure on the vena cava and possible subsequent thrombosis or to rupture of the aneurysm into the vena cava.

Also one might consider other types of mediastinal tumor. A benign neoplasm seems a rare thing. I would rule it out on that alone. You wouldn't expect other tumors to develop so suddenly unless there was hemorrhage into a tumor causing increase in pressure on the vena cava with possibly a resultant thrombosis.

Of the malignant tumors, the most common of mediastinal tumors is lymphosarcoma. Consideration of such a tumor might explain why x-ray treatments to the mediastinum for therapeutic trial were given here immediately. Other possible diagnoses are Hodgkin's disease, abnormally placed organs and persistent thymus. However, these seem a little unlikely.

Pott's disease with a mediastinal abscess extension seems unlikely.

With this extremely sudden onset, I think the most likely diagnosis is an aneurysm of the aorta with pressure upon the vena cava with thrombosis or a rupture of an aneurysm into the vena cava.

I think the immediate cause of death is somewhat speculative.

Dr. Delp: Now tell us again why you felt that this was primarily a vascular lesion.

Mr. McEwen: The patient has a history of lues and the age of the patient would be quite in keeping with the time it would take to develop an aneurysm. There was a mass in the chest which was demonstrable by x-ray and I think an aneurysm is the most likely diagnosis.

Dr. Delp: What about the serology?

Mr. McEwen: It showed a rather high titre.

Dr. Delp: What would that indicate to you?

Mr. McEwen: That there was probably an active lesion.

Dr. Delp: I think we minimize the appearance of the lymph nodes which this patient had. I examined this patient, and in the left axilla the lymph nodes were rather large, I would say about the size of a walnut. Would that change your thinking at all?

Mr. McEwen: After seeing the slide and electrocardiogram, no. You do have to wonder about a history of possible tuberculosis as well as lymphoma or Hodgkin's disease. I think a biopsy might have been helpful, but her blood count rules out these things pretty definitely.

Dr. Delp: Would you have any other explanation for the enlargement of the lymph nodes? Or anything about this particular situation? Are there any physical findings or any signs that might give you adenopathy?

Mr. McEwen: Yes, with increased superior vena caval pressure or stricture one might expect a failure of lymph drainage, and an enlargement of the nodes might occur. If an inflammation were present, the nodes would have been tender.

#### Clinical Discussion

Dr. Max Berry (Medicine): From the history and from the findings that are presented, the diagnosis has to be made of some obstruction to the superior vena cava. I think that leaves us with a firm footing from which to proceed to try to find out why it occurred in the first place and just exactly what happened when the symptoms began.

There are several significant points in the chart which include the presence of a positive Wassermann, the fact that this woman did have physical findings of a widening of the mediastinum, and the presence of a to-and-fro murmur. It makes a little bit of difference if it is loud, as is stated. A loud harsh to-and-fro murmur probably would mean that this patient had aortic valve disease, aortic regurgitation. A small diastolic murmur and a small systolic murmur might be heard in a patient who had a dissecting aneurysm. I think that we could assume that this was vascular.

With the symptoms of vena caval obstruction and rapid onset, we almost have to say either that the patient had a sudden thrombosis due to abrupt increase in pressure or there was a perforation of this aneurysm into some other structure which gave the sudden increase in pressure in the superior vena cava.

Was there a rupture of the aneurysm into the superior vena cava or into some other part of the circulatory apparatus there? I don't know, but I doubt the latter. It would be much easier to explain the sudden onset of symptoms by a rupture of the aneurysm into the superior vena cava than on any



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other one thing. But this patient's findings could be explained merely on the presence of the aneurysm. There is not enough to justify the diagnosis of a rupture of the aorta into the superior vena cava because symptoms had been present a week before admission.

I think that clinically speaking, the sudden onset of this syndrome makes it vascular in origin without doubt. I would like to make the diagnosis of a rupture of the aorta into the superior vena cava, but I don't think it would be possible to do it.

Dr. Delp: Dr. Peete, continuing with that line of reasoning and assuming that this patient did have obstruction of the superior vena cava and assuming that the background etiology for that was an aneurysm of the aorta, do you think it is necessary to have a rupture of the aorta into the superior vena cava in order to get obstruction or thrombosis? Could it occur otherwise?

Dr. Peete (Medicine): I think it is possible that obstructive phenomena of this type could come with pressure of a mediastinal tumor. We thought when we saw the patient in the clinic at first that this was the most logical diagnosis because of the presence of several enlarged axillary nodes. They were definitely enlarged to the point that we thought of the possibility of either lymphoma or a lymphosarcoma. An individual can have edema and not have a tumor but develop increased pressure and then thrombosis of the superior vena cava resulting in this picture.

After listening to this patient and hearing the murmurs described, we suggested a vascular tumor. The blood pressure of 110/70 would tend to make you think that the murmurs were not primarily from aortic insufficiency, that the murmurs were probably higher up in the aorta and could be explained on the basis of a dissecting aneurysm.

#### Pathological Findings

Dr. Kaul (Pathology Resident): On inspection at autopsy the patient had all the physical findings that have been described by Dr. Durkee. They were quite marked. We did the head portion first and found only massive edema of the scalp and some congestion of the brain.

The abdomen showed no unusual findings. The liver was down about three fingers, however, and was fairly small. It apparently was displaced downward in a mass.

In the thorax, both lungs were quite light and showed no congestive tendencies. There was marked widening of the upper mediastinum. The heart itself weighed 210 grams and appeared rather small.

The major findings were a large saccular aneurysm of the ascending aorta which extended from about two cm. distal to the aortic valve up to the root of

the innominate artery. This aneurysm was large enough to hold more than one fist. It extended primarily to the right, superiorly and posteriorly. In so doing it pushed the superior vena cava posteriorly much like a tape measure going around a half of a baseball, and at the upper aspect of the aneurysm in the center portion there was a small perforation two to three mm. in diameter which perforated into the superior vena cava making an arteriovenous fistula.

This was quite a small opening. I don't think that size opening would produce a murmur. The perforation of the superior vena cava was about one cm. beyond the point of entrance of the azygos vein into the superior vena cava. The azygos vein itself showed an antemortem clot.

Incidentally, the remainder of the aorta did show marked linear wrinkling of the type associated with syphilitic aortitis.

In summary, the provisional gross diagnosis was: syphilitic aortitis; saccular aneurysm of the ascending aorta; arteriovenous fistula between the aneurysm and the superior vena cava; agonal thrombosis of the azygos vein; congestive edema of the breasts, upper chest and back, upper extremities, neck and face; cerebral congestion; incidental findings for general arteriosclerosis; chronic cholecystitis and cholelithiasis; multiple renal retention cysts; and chronic adhesive pleuritis.

Dr. Gibson (Pathology Resident): There is some perivascular infiltration in the outer media and the adventitia with lymphocytes and a few plasma cells. There is increased vascularity throughout the outer media and the adventitia.

Those are the main histological findings which confirm the diagnosis of a syphilitic aortitis. It has been estimated that approximately 87 per cent of cases of aortic aneurysm with spontaneous perforation into the superior vena cava are due to syphilis and this has proven to be the case with this patient. The perforation, of course, produced the so-called vena caval syndrome, and I think all the symptoms have been explained adequately on that basis. There is very little we can add to the general discussion.

Dr. Wahl (Pathology): I want to emphasize the rarity of this situation. This is the only case I have ever seen of rupture of an aneurysm into the superior vena cava. The only other instance of a rupture of an aneurysm into another vessel that I have seen is that of an aneurysm rupturing into the pulmonary aorta. It produced rather characteristic machinery murmurs over the chest.

Question: I would like to know if the blood drawn for the complete blood count was taken by way of finger puncture. If so, couldn't we explain the anemia on the possibility that the blood taken by the technician might have contained edema fluid?



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1. Nesbit, R. M., and Glickman, S. I.: J. Michigan State M. Soc. 46:664, 1947.

2. Dodson, A. I.: West Virginia M.J. 45:1, 1949.

3. Seneca, H.; Henderson, E., and Harvey, M.: J. Urol. 61:1105, 1949.

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Dr. Durkee: The blood was taken from the finger, I feel certain.

Dr. Delp: I don't believe that there is any real evidence that this patient had a great blood loss. One of the most characteristic things with sudden blood loss or great loss is an increase in white blood count which did not exist in this case.

Dr. Gibson: I think that this patient undoubtedly died in acute cardiac failure. Her tricuspid valve was quite dilated when we consider the small size of the heart.

Dr. Delp: I think those axillary nodes arose, as Mr. McEwen explained. It is not an uncommon finding in patients who have massive edema. Particularly do you note it in the upper extremities. You also note it in individuals who have exfoliative or massive edema of the skin. There doesn't necessarily have to be an obstructive lesion that produces it, but it does occur. It occurs in all types of mediastinal lesions in which mediastinal obstruction and mediastinal pressure symptoms occur, especially, as in this case, with blocking of normal lymph return. To me those nodes suggested only the tremendous edema in which such lymph nodes may be seen.

Question: In that respect, do you think digitalization might have helped?

Dr. Delp: I think that digitalization was futile. The patient did have a tachycardia, of course, but we had no hope in trying to slow the pulse rate. I think the tremendous edema of the upper extremities and the face would not in itself be sufficient evidence of congestive heart failure.

Numerous particular aspects of this case make it unusual. I think perhaps this patient did not have a great deal of aortic insufficiency. I think that accounts for the fact that she had a reasonably small heart. We realize that in syphilitic aortitis one of the prime factors in enlargement of the heart is the degree of insufficiency that the patient has plus the fact that patients frequently engage in heavy work, putting more strain upon the myocardium, and greater hypertrophy occurs.

I would think that this patient, as has been intimated, had beginning and progressive obstruction of the vena cava over a considerable period of time. I quite agree that dilatation and distention of those venous channels did not occur within one week.

So, I think a mediastinal obstruction had been occurring and perhaps the superior vena caval obstruction had been progressing for a number of weeks. I think the actual perforation or beginning of perforation certainly occurred at the time that the patient's marked swelling developed.

#### Summary

Aneurysm of the aorta intrigues all in medicine regardless of their skills in physical diagnosis. It is, however, a common lesion and even the complication of rupture with perforation into the superior vena cava can no longer be regarded as a true rarity.

Perforation of such aneurysms into the superior vena cava is attended by cyanosis and great edema of the face, neck, arms, and upper thorax. Marked distention of the veins in the same area is also seen. The loud continuous murmur usually seen with perforation of either the pulmonary artery or superior vena cava was not noted in this case. Roentgenographic and electrocardiographic signs were suggestive but not diagnostic.

Other features needing emphasis are here represented. Aneurysms of the thoracic aorta are usually syphilitic, and the heart is not enlarged as a result of aneurysm itself. Lastly such a complication is not immediately incompatible with life.

#### Expanded Blood Program

Announcement was made last month by the Secretary of Defense, General Marshall, that a contract has been signed between the Department of Defense and the American National Red Cross by which the Department of Defense, through the Armed Services Medical Procurement Agency, will provide financial assistance for the Red Cross to rapidly expand its facilities for furnishing blood to the armed forces.

The funds advanced are to be expended solely for the new plasma stock-piling program and for the collection and handling of whole blood for overseas shipments for the armed forces. All blood is contributed by volunteer donors.

To enable the Red Cross to proceed without delay in expanding present facilities and setting up additional blood collection centers, an immediate advance of \$3,000,000 from government funds is provided. Part of the amount will be used to defray expenses involved in transporting blood to overseas shipment points and to processing laboratories where dried plasma and other blood derivatives are produced. An additional \$9,000,000 has been set aside by the Department of Defense for continuing the program.

#### Award to American Optical Company

The gold medal award of the Fashion Academy has been presented to the American Optical Company for its 1951 line of sun glasses on the basis of "consistent design originality and excellent styling," according to an announcement from the company. This is the first time a sun glass manufacturer has received the award.

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## COUNTY SOCIETIES

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A meeting of the Rush-Ness Medical Society was held at the new Rush County Hospital in LaCrosse on November 15. The building was inspected and a business session was held. Dr. D. B. Parker, Ness City, was named president for 1951 and Dr. Kenneth McLain, Ransom, was elected secretary.

\* \* \*

Members of the Shawnee County Society entertained their wives at a dinner dance at the Hotel Jayhawk, December 4. One hundred fifty attended. Dr. Don C. Wakeman took office as president, and the following were named to serve with him during the coming year: president-elect, Dr. Byron J. Ashley; vice president, Dr. George F. Helwig; secretary, Dr. Francis T. Collins; treasurer, Dr. Edward D. Funk.

All members of the Shawnee County Society are automatically members of the Topeka Blood Bank, which held its annual meeting on December 4. Dr. Orville R. Clark, Dr. W. O. Martin and Mr. Carl C. Lamley were named to vacancies on the board of directors, and Dr. Wakeman, as president of the medical society, also took office as a director of the blood bank. Hold-over directors are Dr. H. S. Blake, Dr. A. A. Fink, Dr. Louis Cohen, Dr. R. E. Pfuetze, Mr. Harry Nightingale, and Mr. Leslie Roach.

\* \* \*

The Johnson County Society met at the Green Parrot Inn, Kansas City, December 6. Dr. Paul W. Schafer, head of the Department of Surgery at the University of Kansas Medical Center, discussed surgical treatment of hypertension. At the election of officers Dr. George R. Maser, Mission, was named president and Dr. A. E. Derrington, Mission, secretary-treasurer.

\* \* \*

Dr. George C. Meek, Arkansas City, was elected president of the Cowley County Society at a meeting held at the State Training School, Winfield, November 16. Dr. G. L. Norris, Winfield, was named vice president, and Dr. Jack V. Sharp, Arkansas City, secretary. Dr. Thomas L. Hill and Dr. Howard E. Snyder, both of Winfield, were elected delegates to meetings of the state society. Dr. C. C. Hawke, physician at the training school, presented the evening's program by describing cases at the school.

\* \* \*

The Pratt County Society, at a meeting held at the Black-Christmann Clinic, Pratt, on November 14, elected the following officers for 1951: president, Dr. W. D. Pitman; vice president, Dr. E. F. Jacks; secretary-treasurer, Dr. F. G. Freeman.

\* \* \*

The Montgomery County Society, in cooperation

with the County Health Department, is sponsoring a county-wide immunization program for all grade school children.

\* \* \*

A meeting of the Barton County Society was held at the Parrish Hotel, Great Bend, November 27. The following officers were elected: president, Dr. Edward Atkin, Hoisington; vice president, Dr. T. J. Brown, Hoisington; secretary-treasurer, Dr. Homer B. Russell, Great Bend; delegate, Dr. Robert C. Polson, Great Bend; alternate, Dr. David T. Loy, Great Bend.

\* \* \*

The Labette County Society, at a recent meeting, pledged support of a city health council for Parsons. Dr. John White and Dr. John Dixon were chosen to serve as council representatives.

\* \* \*

The Atchison County Society was the subject of a feature article in the Atchison Globe on November 26. The story covered the early history of the Kansas Medical Society and activities of Atchison physicians in the 19th century.

\* \* \*

Members of the Franklin County Society and their assistants attended a dinner given by representatives of Blue Cross and Blue Shield at the Ottawa Country Club, November 28. Dr. J. A. Holmes, Lawrence, a member of the Kansas Medical Society Committee on Medical Assistants, and Mrs. Berenice Asher, Lawrence, president of the Kansas Medical Assistants' Society, were principal speakers. Plans were made for the formation of a medical assistants' organization in Franklin County.

\* \* \*

At a meeting of the Crawford County Society held recently Dr. J. D. Pettet, Pittsburg, was named president for 1951. Other officers are: Dr. Paul B. Leffler, vice president; Dr. Howard R. Elliott, secretary-treasurer.

\* \* \*

Dr. J. P. Berger, Wichita, was guest speaker at the November meeting of the Lyon County Society. His subject was "Common Cutaneous Tumors, their Diagnosis and Management."

\* \* \*

A meeting of the Sedgwick County Society was held at the Broadview Hotel, Wichita, December 5. Dr. Herbert Wenner, of the University of Kansas Medical Center, discussed research on poliomyelitis, and Dr. Ralph Major, professor of medicine at the center, told of his recent trip to Europe.

\* \* \*

Dr. Wayne O. Wallace was elected president of the Atchison County Society at a meeting held at Atchison December 5. Dr. G. A. Patton was elected vice president and Dr. Robert Brown was named



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Common Problems in X-ray Interpretations  
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secretary-treasurer. Dr. Arthur Whitaker will serve as delegate to the state society with Dr. Edwin Wulff as alternate. It was reported at the meeting that two cases of diabetes were discovered during National Diabetes Week, November 12-18, when the physicians gave free urine examinations.

\* \* \*

Dr. F. R. Croson of Clay Center, president of the Kansas Medical Society, was honored by the Clay County Society at a dinner at the Clay Center Country Club on November 22. Eighty Kansas physicians and their wives were present. The address of the evening was given by Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine.

\* \* \*

A luncheon meeting of the Wyandotte County Society was held at the Terrace Club, Kansas City, December 11. Guest speaker was Dr. Hart E. Van Riper, medical director of the National Foundation for Infantile Paralysis, who presented a check for \$43,710 to the University of Kansas Medical Center, part of a grant of \$92,710 to the center for research during 1951.

\* \* \*

Dr. C. W. Wilson, St. Francis, was elected president of the Northwest Kansas Medical Society at a meeting held recently.

\* \* \*

Officers of the Leavenworth County Society for 1951 are: president, Dr. G. S. Voorhees; vice president, Dr. H. J. Stacey; secretary-treasurer, Dr. Vincent A. Christ.

\* \* \*

A meeting of the Southeast Kansas Medical Society was held at Neodesha on December 13. A talk on treatment of injuries and infections of the hand was given by Dr. Harry Allen of Chicago, associate professor of surgery at Northwestern University School of Medicine.

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## ACTIVITIES OF MEMBERS

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Dr. Fred Bosilevac and Dr. Charles A. Crockett, on the faculty at the University of Kansas Medical Center, recently became diplomates of the American Board of Ophthalmology.

\* \* \*

Dr. Cyril V. Black, Pratt, addressed a joint meeting of insurance men and physicians at the Black-Christmann Clinic at Pratt November 28. He discussed attempts at socialization of professions and business.

\* \* \*

Dr. John G. Hoffer, who formerly was with the V.A. in Wichita, is now at the V.A. Center in Fargo, North Dakota.

Dr. E. H. Beahm, Independence, has been named medical advisor to the local selective service board, replacing the late Dr. C. O. Shepard. Dr. Charles E. Gollier, Independence, has been appointed coroner of Montgomery County to serve in Dr. Shepard's place.

\* \* \*

Dr. Thomas Perdue, Parsons, was guest speaker at a Lions Club meeting in that city recently. He discussed city health problems.

\* \* \*

Dr. Donald L. Rose, chairman of the department of physical medicine at the University of Kansas Medical Center, presented a paper, "The Conservative Management of the Painful Shoulder," at a meeting of the Southern Medical Association in St. Louis in November.

\* \* \*

Dr. Leo D. Robinson, Iola, spoke on the subject of psychoneurosis at a recent meeting of a study club for registered nurses in that city.

\* \* \*

Dr. Floyd C. Beelman, Topeka, has been appointed as a member of the Kansas Civil Defense Advisory Council by Governor Frank Carlson.

## DEATH NOTICES

**ELMER J. REICHLEY, M.D.**

Dr. E. J. Reichley, 75, who had practiced in Herington since 1919, died at his home there November 27. He was graduated from the University Medical College of Kansas City in 1906 and practiced first in Helena, Oklahoma, leaving there to serve in the Army medical corps in World War I. He was an active member of the Dickinson County Medical Society.

\* \* \*

**FRED EMERSON TORRANCE, M.D.**

Dr. F. E. Torrance, 68, an active member of the Cowley County Society and a fellow of the American Medical Association, died November 18 at Winfield. A graduate of Rush Medical College, Chicago, in 1912, he began practice in Winfield in 1914 and continued practicing there until his death.

\* \* \*

**SOLOMON HENRY THOMPSON, M.D.**

Dr. S. H. Thompson, 80, who had practiced medicine 54 years before illness forced his retirement in 1946, died December 11 at Douglas Hospital, Kansas City. He was graduated from Howard University College of Medicine, Washington, D. C., in 1892. He was active in civic affairs in Kansas City and served as a member of the planning commission for a number of years. He was an honorary member of the Wyandotte County Society.



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Dr. F. W. Matassarini, Wichita, recently became a member of the American Urological Association.

\* \* \*

Dr. Leo E. Haughey and Dr. E. Raymond Gelvin, surgeons in Concordia, have purchased Fontbonne Hall, formerly a bishop's residence in Concordia. They will remodel the building and will open a clinic there after the first of the year.

\* \* \*

Dr. Austin J. Adams, Wichita, discussed mental health before a meeting of the Wichita Exchange Club on November 17.

\* \* \*

Dr. John White, Parsons, was speaker at an open meeting sponsored by the Labette County Cancer Society on December 1. Members of women's clubs in the county attended.

\* \* \*

Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, discussed the expansion program of the school at a meeting of the Wichita Bar Association on November 28. He also was speaker at a banquet given recently by Alpha Delta Theta, an organization of medical technicians, as a part of their national convention held at Manhattan, Kansas.

\* \* \*

Dr. A. R. Chambers, who recently completed two years as president of the Iola Chamber of Commerce, was the subject of an editorial in the Iola Register on November 30.

\* \* \*

Dr. Karl Menninger, Topeka, served as a member of a committee to select the winner of the year's Lane Bryant Annual Award, which went to the League of Women Voters of Des Moines, Iowa.

\* \* \*

Dr. James E. Hill, Arkansas City, recently became a diplomate of the American Board of Ophthalmology.

\* \* \*

Dr. F. R. Croson, Clay Center, was guest speaker at a recent meeting of the Canton Lions Club. He presented a travelogue on Italy, illustrated with colored slides.

\* \* \*

Dr. J. D. Pace, Parsons, was chosen coroner of Labette County at the November election.

\* \* \*

Dr. D. B. McKee and Dr. Herbert Smith, Pittsburg, took part in a program for the formal dedication of the new wing at Mount Carmel Hospital, Pittsburg, on Thanksgiving Day.

\* \* \*

Dr. C. W. Henning, Ottawa, addressed the Kiwanis Club in that city on the subject of diabetes recently.

An article in praise of Dr. O. D. Walker, Salina, was printed in the December 3 issue of the Salina Journal, in observance of his 90th birthday.

\* \* \*

Dr. Gretchen Guernsey, of the University of Kansas Medical Center, became a diplomate of the American Board of Anesthesiology recently.

\* \* \*

Dr. E. S. Edgerton, Wichita, was speaker at a cancer meeting sponsored by the Sisterhood of the Hebrew Synagogue in Wichita recently.

\* \* \*

Dr. H. S. Bowman, Wichita, has been elected an active fellow of the American Academy of Orthopedic Surgeons.

\* \* \*

Dr. William N. Harsha, resident in surgery at the University of Kansas Medical Center, is spending three months at the Institute for Nuclear Studies at Oak Ridge, Tennessee. He is doing research on peaceful aspects of atomic energy.

\* \* \*

Dr. and Mrs. Joseph D. Pettet, Pittsburg, celebrated their golden wedding anniversary on December 9 with their son, Lt. Col. Joseph W. Pettet at Camp Gordon, Augusta, Georgia. They returned to Pittsburg after a motor trip along the gulf to Houston.

\* \* \*

Dr. J. E. Henshall, Osborne, has been appointed a member of the three-man board of directors of the State Soldiers Homes in Kansas, one at Ellsworth and one in Fort Dodge.

\* \* \*

Six Kansas physicians attended the White House Conferences on Children and Youth in Washington, D. C., December 3-7, Dr. L. E. Eckles, Dr. Paul R. Ensign, Dr. E. D. Greenwood and Dr. William C. Menninger, all of Topeka, Dr. Mary Glassen, Phillipsburg, and Dr. Orville S. Walters, McPherson. Dr. Menninger, as a member of the national executive committee, appeared on the program.

\* \* \*

Dr. Louis S. Morgan, Wichita, has established an office with the Meek-Stensaas Clinic in Arkansas City and will spend every other Thursday afternoon there as a consultant in psychiatry.

\* \* \*

Dr. J. L. Lattimore, Topeka, was speaker at a meeting of physicians, lawyers, dentists and pharmacists and their wives at Parsons, December 14. The meeting was sponsored by the Woman's Auxiliary to the Labette County Medical Society.

\* \* \*

Dr. William C. Menninger, Topeka, spoke on "Psychiatry in the Army," to the staff, faculty and students of the Command and General Staff College

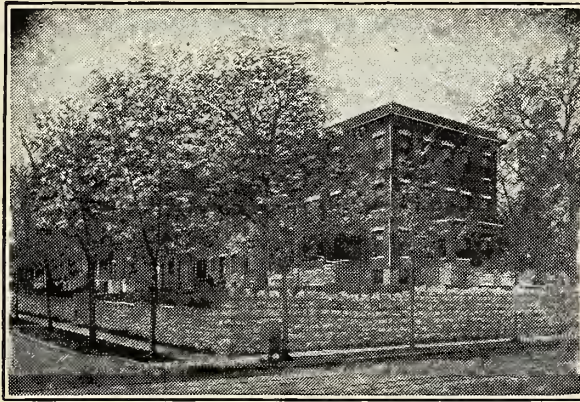


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and the Army War College at Fort Leavenworth on December 18.

\* \* \*

Dr. Vernon M. Winkle, Kansas City, was one of the speakers at the annual convention of the Kansas Sanitarium Association held at Wichita last month.

\* \* \*

Dr. W. A. Carr has been selected to fill a vacancy on the city commission at Junction City.

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## ANNOUNCEMENTS

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A postgraduate course in fundamentals of electrocardiography will be held at the University of Oklahoma School of Medicine, Oklahoma City, February 19 through February 24. Dr. Robert Bayley, professor of medicine at the university, will conduct the course. A fee of \$60 will be charged. Complete information may be secured from the Office of Postgraduate Instruction, University of Oklahoma School of Medicine, 801 N.E. 13th Street, Oklahoma City.

\* \* \*

The 24th annual meeting of the National Conference on Medical Services will be held on Sunday, February 11, at the Palmer House in Chicago. The meeting is of special importance to presidents, secretaries, and public relations personnel of state and county medical societies.

\* \* \*

The 11th annual essay contest of the Mississippi Valley Medical Society will be held in 1951. A cash prize of \$100, a gold medal and a certificate of award will be given for the best unpublished essay on any subject of general medical interest and practical value to the general practitioner. Contributions are to be typewritten, submitted in five copies, and should not exceed 5,000 words. Closing date for the contest is May 1, 1951. Further details may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209 W.C.U. Building, Quincy, Illinois.

\* \* \*

A postgraduate convention sponsored by the Alumni Association of the College of Medical Evangelists will be held at the Biltmore Hotel, Los Angeles, March 11-16. The program will be divided into two main parts, three days of scientific papers, exhibits and motion pictures, followed by three days of concentrated and practical special courses. The courses, on medicine, pediatrics, diseases of the chest, dermatology, neurology, psychiatry, general and orthopedic surgery, ophthalmology, otolaryngology, urology, proctology, anesthesiology, gynecology and roentgenology, will be given on the campus of the College of Medical Evangelists, Los Angeles Division, at the White Memorial Hospital. Formal

credit will be granted toward membership in the American Academy of General Practice. Registration fee for the convention is \$10 and for the special courses \$15. Additional information may be secured from Dr. Jerry L. Pettis, Managing Director, White Memorial Hospital, 312 North Boyle Avenue, Los Angeles 33, California.

\* \* \*

The National Foundation for Infantile Paralysis announces that a limited number of fellowships are available to candidates whose interests are research and teaching in fields related to the problems of poliomyelitis such as virology, biochemistry, biophysics, orthopedics, pediatrics, neurology and epidemiology. Postdoctoral fellowships cover a period of one to three years with the privilege of renewal depending on the candidate's previous training and his program. Stipends will range from \$3,600 to \$7,000 per year.

Information on qualifications and applications may be obtained from Division of Professional Education, National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

\* \* \*

The American College of Allergists will hold its seventh annual meeting at the Edgewater Beach Hotel, Chicago, February 12-14. A post-collegiate instructional course will be offered on the three days just preceding the annual conclave. The course has been arranged with the thought in mind that 10 per cent or more of all patients in a physician's practice have an allergic component in their complaint. A fee of \$35 will be charged for the course, lasting through February 11. Complete details may be secured from Fred Wittich, M.D., American College of Allergists, LaSalle Medical Building, Minneapolis, Minnesota.

\* \* \*

The third Western Institute on Epilepsy will be held in Salt Lake City, Utah, the week-end of June 15 to 17, 1951. Information may be secured from Dr. Harriot Hunter, University of Colorado Medical Center, 4200 East Ninth Avenue, Denver, Colorado, or Dr. Jean P. Davis, University of Utah, College of Medicine, Salt Lake City, Utah.

A preventive medicine unit of company size, first of several of its kind now being organized by the Army Medical Service, has arrived in the Far East Command for duty in Korea, according to an announcement by Major General R. W. Bliss, Army Surgeon General. In addition to malaria control and survey, the units will be responsible for inspections of field sanitary conditions and control of insect-borne, water-borne, and other diseases. The companies are composed of six officers, one warrant officer and 59 enlisted men.



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## BOOK REVIEWS

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*Natural Childbirth.* By Frederick W. Goodrich, Jr. Published by Prentice-Hall, Inc., New York. 176 pages, Price \$2.95.

This small book is well written and very readable. It contains all of the essential information, is well arranged and presented in a manner which should be attractive to the lay public. It is the best book of its kind that I have seen.—L.A.C.

\* \* \*

*Researches in Binocular Vision.* By Kenneth N. Ogle. Published by W. B. Saunders Company, Philadelphia. 345 pages. Price \$7.50.

This is an excellent book concerning research in binocular vision and is written in a clear, concise manner. The book does not appear to have been written primarily for the clinician but rather for those interested in the theory and details of binocular vision. It brings together a large number of articles and publications that are not readily available. I feel that Dr. Ogle has not allowed his personal opinions to control the content of the book, but rather has presented the facts. This is a good book for those interested in the most recent findings concerning binocular vision.—A.N.L., Jr.

\* \* \*

*Thoracic Surgery.* By Richard H. Sweet. Published by W. B. Saunders Company, Philadelphia. 345 pages, 155 illustrations. Price \$10.

This book presents an excellent delineation of almost all phases of pre- and postoperative care of the thoracic surgery patient. The material is presented in an easy to read manner, yet detail and pertinent information have not been sacrificed to oversimplicity. The book gives a concise and factual presentation of standard accepted methods and procedures in thoracic surgery and emphasis of the salient features in diagnosis is made throughout. The volume is well illustrated with photographs and many fine sketches and diagrams by Gorge Arroyo.

The book is divided into sections that consider the anatomy of the thorax, physiology, anesthesia, chest wall, traumatic lesions of the thorax, diaphragmatic hernia, mediastinum, esophagus, pericardium, heart, diseases of the pleura, and surgical diseases of the lung. There is a section on the surgical treatment of pulmonary tuberculosis.

The scope of this book is such that it makes excellent reading as well as reference material to the student and general surgeon as well as the specialty surgeon doing largely thoracic surgery.

The book seems to be complete in its field, save perhaps for one omission from statistical evaluations of the several procedures suggested.—W.N.H.

*Bronchoesophagology.* By Chevalier Jackson and Chevalier L. Jackson. Published by W. B. Saunders Company, Philadelphia. 366 pages, 260 figures. Price \$12.50.

As usual this publication by the Drs. Jackson is beautifully illustrated, and the thoroughness and simplicity of the context are most refreshing. Of particular excellence is the portion dealing with the management of forceps. The book is of value to the beginner in peroral endoscopy, and serves as a splendid manual of reference for the experienced bronchoesophagologist.—G.O.P.

\* \* \*

*Regional Orthopedic Surgery.* By Paul C. Colonna. Published by W. B. Saunders Company, Philadelphia. 706 pages, 474 figures. Price \$11.50.

This is a new textbook of orthopedic surgery. The first three chapters consider the physiology of bones and joints, orthopedic examination, and muscle testing, and general pathology of bones and joints. The following 11 chapters follow the regional classification and each chapter begins with a section on the applied anatomy of that particular region. The coverage includes a consideration of the fractures and dislocations commonly encountered in each region. The last four chapters are on neuromuscular disabilities, bone tumors, apparatus, and physical medicine applied to orthopedic surgery, respectively.

The text does not cover details of operative and manipulative methods. Lack of discussion of theoretical matters limits somewhat the reference value of the chapters relating to the orthopedic basic sciences. The book is undoubtedly useful as an introduction to orthopedic surgery and fractures, and includes in one volume much material with which one doing orthopedics should be familiar. It should be a useful book for medical students, and a satisfactory introductory text for internes and residents starting on a program of orthopedic training.—E.T.H.

\* \* \*

*Pathologic Physiology: Mechanisms of Disease.* Edited by William A. Sodeman. Published by W. B. Saunders Company, Philadelphia. 808 pages, 146 figures, 30 tables. Price \$11.50.

This book was published under the editorial direction of William A. Sodeman, M.D., who with the help of 25 authors presents an approach to internal medicine which is definitely different than that generally given, namely, a discussion of the problems of disease from the viewpoint of disturbed physiology.

The authors do not attempt to replace the accepted type of textbook in which disease is discussed as to etiology, pathology, symptoms and treatment, but instead they hope that their book will act as a



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bridge between the science of physiology and clinical medicine. The value of the book can be quickly determined by a review of its authors, among whom are F. D. Johnston, Edgar Hull, Harry L. Alexander, Walter L. Palmer, William B. Castle, Charles A. Doane, A. C. Corcoran, Irvine H. Page, and Richard H. Freyberg. The other authors are of equal stature, and consequently the book is excellent.

The sub-divisions of the book are the circulatory system, respiratory system, digestive system, blood and spleen, urinary tract, endocrine glands, locomotive system, infectious diseases, and physical and toxic agents. The authors have succeeded admirably in their intended purpose of approaching disease states from the viewpoint of disturbed physiology. Such a method has considerable merit, and it is probable that future medical education will use such a technique. This book serves a useful purpose in the correlation of abnormal physiology with disease states.—E.G.D.

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## ABSTRACTS FROM CURRENT LITERATURE

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### BAL in Diabetic Neuropathy

*The Use of BAL in the Treatment of Diabetic Neuropathy.* By Robert W. Schneider, *Cleveland Clin. Quar.*, 17:4, 197-208, Oct., 1950.

BAL, British Anti-Lewisite, is an extremely potent compound containing two sulfhydryl radicals which have a great affinity for heavy metals. Many essential enzyme systems contain heavy metals within their chemical structures. Webb and Von Heyningen showed that seven enzyme systems were strongly inhibited by BAL.

Heavy metals usually produce toxicity because of their affinity for sulfhydryl radicals present in the prosthetic group of many essential enzymes. The application of BAL to treatment of heavy metal intoxication was based upon its ability to supply competing sulfhydryl radicals in order to protect, as well as reactivate, previously affected enzyme systems.

The administration of heavy metals logically increases the tolerance of the organism to BAL. This is of importance in gauging the dose for use in diabetic neuropathy, since it has not been demonstrated that the latter condition is related in any way to heavy metal poisoning. Therefore, the dose in this series of cases was maintained far below that employed for treatment of heavy metal poisoning.

Twenty-two patients were treated. Each patient had received varying periods of diabetic control with improvement in nutrition, and many had taken additional vitamins prior to BAL therapy. All had failed to improve. BAL was given intra-

muscularly in doses of 50 mg. on the first day, 100 mg. on the second day, and subsequently 100 mg. once or twice a day, occasionally three times a day. Duration of treatment was from seven to 14 days.

Twelve patients showed striking improvement. Nine of these 12 experienced an accentuation of pain, following the distribution of the involved nerve or nerves, beginning five to 15 minutes after the injection and persisting for one-half to two and one-half hours. It is interesting that eight of these nine patients who experienced accentuation of pain during treatment have been free of discomfort for one to 21 months. The remaining three patients improved with treatment, but had no increased pain during treatment, and two of these had recurrences after a short time.

The 10 patients who failed to improve had neuropathy of long duration or evidence of more extensive nervous system damage or other factors contributing to the pain.

No toxic reactions were observed except for local burning at the site of injection.

Little is known concerning the etiology and pathology of diabetic neuropathy. Woltman and Wilder demonstrated arteriosclerosis of the nutrient vessels of the nerves, which they consider an important factor in production of diabetic neuritis.

Neuritic symptoms may be the first indication of diabetes, may never occur during a lifetime of diabetes, may occur after control is well established. These symptoms tend to be chronic, improving only very slowly over months of time, and do not seem to be helped by vitamin B. These facts, plus the bizarre features of the neuropathy in some patients, must be considered in evaluating the effects of BAL therapy.—E.J.R.

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## AMERICAN BOARD EXAMINATIONS

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*Anesthesiology.* Written, various locations, July 20. Oral, Coronado, Calif., April 4-7; Memphis, October 14-17. Secretary, Dr. Curtiss B. Hickcox, 80 Seymour Street, Hartford 15, Conn.

*Internal Medicine.* Executive Secretary-Treasurer, Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

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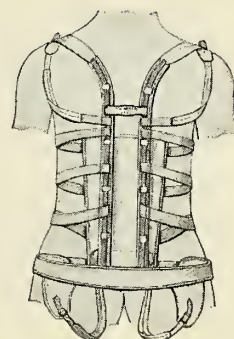
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\* \* \*

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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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No. 2

## The Problem of Success and Failure in the School Age Child

Rodger A. Moon, M.D.\*  
Emporia, Kansas

Clara Lambert, in a pamphlet distributed by the Kansas State Health Department entitled "Understand Your Child—from 6 to 12,"<sup>1</sup> speaks of the school years from nursery to adolescence as "the forgotten years of childhood." After a search of the literature for material for this paper, I am inclined to agree with her. Much has been written about the pre-school child and about the adolescent, but articles dealing with the school age child are few and far between.

In some respects this situation is understandable. The first five years of a child's life are of great importance in determining personality traits which the child will carry throughout his or her life. It has been truly said that a child's behavior at school reflects the home environment. More fundamental, however, than behavior characteristics are the child's mental attitudes toward school mates, toward teachers, and toward himself. If the first five years of life have been characterized by parental harmony, love, and understanding, if the child feels secure in his place in the family, and secure in the place of the family in the community, then he should have a minimal amount of difficulty in making the many adjustments which must be made when he leaves the small, protective circle of the family for the wider experiences of school life.

The adolescent period receives considerable attention because it is at this time that the effects of the pre-school and early school experiences usually become manifest in either "normal" or "delinquent" behavior. At this period, too, there are important adjustments—adjustment from the child's world to the adult's world, adjustment to awakening instinctive sexual drives; and adjustment to the physical changes which are taking place.

### General Consideration of the School Age Child

Let us return to the school age child and his emotional problems, for the child of this age-group does, as already indicated, have a number of prob-

lems. The child of this age goes off to school not quite as care-free as one would think from observing him as he goes skipping along. He is concerned about this change that has come into his life, for he dislikes nothing more than to have the things he has become used to disrupted. He likes the same story time after time. He dislikes to move to a new home, even though it is nicer than the old one, and he dislikes to be removed from his own familiar group of playmates. He worries about the baby brother left at home without "big brother" to look after him. He feels uncertainty regarding the matter of death, about which he has recently become concerned, and he is confused regarding matters pertaining to sex.

### The Problem of Success and Failure

It is with none of these problems, however, that I wish to deal in this paper; it seems to me that there is one problem of the school age child today that out-weighs all others in importance. This is the problem of success and failure.

Why is the problem of success and failure of such importance? Dr. Iago Gladstone, in an article in *Mental Hygiene*<sup>2</sup> on the subject of delinquency, states that a human infant brings into life three mental characteristics: "(1) a strong instinctual drive; (2) the potentialities for loving; and (3) a large capacity for learning by experience." The instincts are given the infant fully developed, but the capacity to love and live in harmony with his fellows must be realized in experience; i.e., the infant, and later the child, must experience love in order that he, himself, may love. Therefore, if the experience is lacking, or is of such a nature as to inhibit the capacity to love, the child's personality becomes retarded and arrested in its development toward individual and social effectiveness. Such a child develops a personality charged with the conviction that every man's hand is against him, and his against every man. Herein lies the importance of the problem of success and failure.

\* Assistant in Pediatrics, University of Kansas Medical Center, Kansas City, Kansas.

### **Incidence of Maladjustment in Children**

In a study made recently of our schools in Kansas 695 emotionally maladjusted children were discovered, and it was estimated that there are an additional 11,240 of these children out of a population of 400,000. Every year approximately 2000 cases of juvenile delinquency appear before either the juvenile or the probate courts in Kansas.<sup>3</sup> A great number of these cases are either traceable to failure in school, or have been aggravated by failure in school.

### **The Effect of Failure upon the Child**

R. W. Tyler, chairman of the Department of Education at the University of Chicago, in an article entitled "Cooperation and Conflict in the Mental Development of the Child,"<sup>4</sup> makes this statement: "Practical school experience and psychological studies have both indicated negative, often devastating effects of failure. Children have lost confidence, have ceased to be interested in school work, have even hated educational activities, and, in many cases, have developed patterns of anti-social behavior, as reactions to school failure." Studies of the personalities and intelligence of the inmates of our penal institutions have shown that by and large these people are of below average intelligence, and a careful examination of their history often shows that their trouble began with persistent failure in school with its inevitable penalty, the loss of the esteem and respect of society. The equally inevitable reaction of hostility toward society which followed resulted in their unfortunate careers. How worthwhile it would be, then, if we could somehow change this chain reaction of failure, loss of love and respect, and hostility!

It seems pertinent at this point to inquire, "Why does failure in school have such a serious effect on our children? Who or what is to blame?"

The answer to this question is that we are all to blame: physicians, teachers, fathers and mothers, and others who come in contact with children.

Fathers and mothers are to blame when, as parents of a pre-school child, they attempt to press that child into a mold of their own design—usually in the image of themselves as they imagine themselves to be, or as they wish they could be. They begin dreaming dreams and making plans for Junior the moment he arrives on the scene. He will be a star athlete and graduate from high school, if not as valedictorian, then certainly on the honor roll. He will, of course, go to college, and they may even enroll him, at the tender age of six weeks, in the class of 1967 of their particular alma mater!

Fathers and mothers are to blame when, as parents of the school-age child, they berate, scold, or even punish that child for failing to pass to the next grade, for bringing home only fair marks on

the report card, or even for failing to get superior grades in all studies—although they do not expect adults to be equally talented in all kinds of endeavor.

Fathers and mothers are to blame when, by their attitudes and remarks, they indicate to their children that to fail is shameful and disgraceful, and thereby give their tacit approval to the ridicule of other children who, because of lower intelligence, fail in the regular classes and must attend the "opportunity room."

Parents are to blame when they fail to realize or accept the fact that failure in school may be due to visual or hearing defects, fatigue or chronic illness; that a child may have difficulty because he is of high intelligence and is bored because the work is too easy; that nervousness, worry, and insecurity in the home are also causes of failure; and that the cause of a child's failure is probably not laziness.

We, as physicians, are also at fault if we fail to inform the public in these matters, whether by means of appropriate counsel to parents who come to us for help, or by talks before lay audiences. Furthermore, we may be at fault if we resort to "snap judgment" and categorize a child as mentally deficient without first having carefully investigated the case from a social and psychiatric point of view.

Teachers are to blame when they fail to capitalize on special aptitudes of their slower pupils in order that their interest and self-respect may be maintained.

Lastly, we need to take into account the highly competitive nature of the world in which we live, where success is too often measured by the wealth accumulated rather than by the amount and quality of service which has been rendered.

### **Case Studies**

The following case studies have been chosen to illustrate a few of the problems I have been discussing:

1. This is the case of Jim<sup>5</sup>—a boy of 14, who, at the end of his 10th week in high school was failing in three major subjects. His past record showed him to be of average intelligence, and he had had no previous serious difficulty with his studies. His outstanding ability was art. Inquiry into the family situation revealed that the father had had a nervous breakdown from which he had not completely recovered. The father had not finished high school himself, having had to "come up the hard way." His attitude was that his son was having an easy life with nothing to do but study, and should make all "E's" and "S's." The father had high hopes that his son would be able to go to college and become a doctor. Jim's interest in art, a quality he apparently acquired from his mother, was regarded by the father as being silly, and Jim was not permitted to take any art courses. The



mother reported that the father raved when he saw the report card and called his son "stupid" and "dumbbell." He blamed the mother for the boy's poor showing.

The thing that brought the mother to the dean's office was that Jim wanted to quit school. After several interviews with Jim, permission was obtained from the mother for Jim to join the poster club. He was also appointed to help the science teacher in making wall charts and graphs. His math course was dropped and he was given special help for a short time in his other courses. Jim's subsequent progress was eminently satisfactory. Miss Kathleen Bardner, who reported this case from a high school dean's office, stated, "He had won recognition and honor from his teachers and classmates. But what was important he had found a deep personal satisfaction in his school work."

Jim's difficulty was a conflict involving his desire to please his father, his inability to excel the abler pupils, and his own interest and aptitude in art. He became confused and frustrated, and felt unloved and looked down upon by his family and classmates. His energies were thus taken up by his emotional problem to the extent that he failed completely and sought escape from his problem by quitting school.

2. Another case<sup>6</sup> which illustrates some of the complexities which may be responsible for a child's failure in school is that of a seven-year-old boy, Tommy. Tommy was brought to a child guidance clinic by his mother because he was doing very poorly in the second grade, and was acting much of the time as though he were afraid. Tommy had had a psychological examination which revealed him to be of normal intelligence. The mother's description of Tommy's fearfulness, his tendency to cry, and his reluctance to play with other children, suggested that personality problems connected with his trouble in doing school work might be present.

After a few interviews with the psychiatrist it became evident that his trouble with school work was due to a specific disability in reading and spelling. Indeed, he was willing and eager to learn to read and could respond very well to suitable remedial teaching. It was discovered that Tommy was learning words by depending entirely on his exceptionally good visual perception and memory, and that he had never begun to associate the names of letters and words with the written symbols for them. In other words, to him, spoken and written words were quite separate things and he did not think of them as being at all related to each other. His dislike of school and his apprehensive attitude in the classroom disappeared as soon as his reading improved.

It was also found that Tommy's fears and unhappiness were not symptoms of neurotic conflicts

any more than was his trouble with school work. Instead, Tommy was afraid that his mother would scold and punish him and was unhappy over her dissatisfaction with him. Tommy's avoidance of other children appeared to be due to his mother's restriction of his friendships with them. She disapproved of playmates who might teach him rough ways, and considered most of the neighborhood children in that category. Moreover she wanted him to work on his lessons instead of "wasting time" in play. Tommy's parents often used him as a scape goat on whom they took out the anger they often felt for each other. Therefore, Tommy's fearfulness was simply a natural response to harsh treatment.

Tommy's case illustrates the fact that failure in school may be due to an actual disability on the part of the child, and that associated with this disability there may be other contributing factors in the personality background which need attention.

3. Another case from the same clinic<sup>6</sup> is that of a nine-year-old boy, Arthur. He was brought to the clinic by his mother on the recommendation of the doctor to whom she had taken the child when neighbors complained of his sexual activities with the other children of the neighborhood. Arthur was an only child of a family who lived in a small house near the railroad tracks. Investigation revealed that there was considerable conflict in the home between the parents with talk of separation and a divorce. Arthur usually slept in the same bed with his parents, and had either observed or had heard them having intercourse. He had developed an intense preoccupation with sexual matters and had a deep sense of guilt with fears and fantasies of death and punishment arising from his attendance at church where he had been impressed with the sinfulness of sex misconduct. Arthur was having a great deal of difficulty at school, although his I.Q. proved to be average—95. He did not like school because the work was difficult for him and he talked of having failed.

In the interpretation of Arthur's case at staff conference the following appears: "His school difficulties, too, may be related to emotional conflict. There are the additional factors of faulty work habits and a possible reading disability. It may be that he is so preoccupied with his parents' quarrels and the possible break-up of the home that he cannot concentrate on his schoolwork. One gets the impression from the case worker's interviews that, as the only child, he has been indulged by his parents, a fact which may also contribute to his poor work habits."

With psychiatric treatment Arthur gradually lost his fears and preoccupation with sex and his school work greatly improved. Three and one-half years

after treatment had been started Arthur's teacher reported that Arthur was showing real interest in his school work and doing quite well. The teacher said she was surprised at his ability for she had thought him dull.

Arthur's case is an illustration of failure in school and in his interpersonal relationships which proved to be due to a faulty home environment resulting in an actual neurosis. After adequate psychiatric treatment and an improvement in the home situation the child was able to succeed in his school work and develop satisfactory relationships with other children.

#### The Solution to the Problem of Success and Failure

What is the solution to this problem of success and failure? How can we prevent it from becoming a problem?

In a broad sense it seems that we must begin a program of re-evaluation and re-education in much the same way that we are now attempting to deal with racial problems. We need to realize that most of the population who are below the accepted level of normal intelligence are capable of becoming, with proper training, useful citizens. In addition, as indicated above, we must look for other causes of failure besides that of mental deficiency, realizing that there are many other factors which may interfere with the proper application of even normal intelligence.

More specifically we must accept the fact that not all of our sons and daughters, either need, or should have, a college education; and, in some instances, not even a high school education. We must allow our children to grow up to be themselves, and not replicas of ourselves as we wish we were; and we must teach our children by our own example to have respect for, and appreciation of, those who are intellectually less fortunately endowed.

Many of our school systems have made great strides in the handling of the exceptional child. Curriculae have been made more flexible, instead of being designed strictly for the average student. Democratic, rather than dogmatic, practices have come into our school rooms. The old-fashioned report card is giving way to the individual letter from the teacher to the parent setting forth the pupil's progress and capabilities. For the definitely retarded child special rooms or schools have been

evolved where these children may progress, removed from competition, each at his or her own rate of speed.

As the deleterious effect of failure has become known there has developed a movement to establish a policy of "no failures" in some school systems. Recent research studies, as reported by Mr. Tyler<sup>4</sup> in the article previously referred to, indicate that success is a powerful motivating factor in the development of children. These studies also indicate that success gains its major significance only in relation to failure. "Hence failure does have the function in human life of giving meaning to success as the avoidance or alternative to failure. It has a social function in helping a person who experiences failure to understand and appreciate the failure of others. Occasional school failures prepare the individual for meeting the occasional failures of later life. Having learned that he can take failure he does not regard it as a catastrophic experience." Mr. Tyler goes on to say, "The conclusion that might safely be drawn from recent studies in this field is that each child's learning requires a balance of success and failure—much more success than failure, but some of both."

Mr. Tyler does not suggest how this balance is to be achieved, and I am afraid my competence does not permit any suggestions along this line. The point of major importance is that the moral stigma of disgrace must be removed from failure so that every child, whether he succeed or fail, will still feel loved and appreciated for the capabilities he does possess. Then he, in turn, will be able to develop an out-going personality, and be capable of loving and living in harmony with his fellows. If this can be achieved, crime and delinquency will become one of our minor problems.

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# Rapid Rehabilitation of Disabilities of the Knee

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The persistence of instability of the knees in many instances following disease, injury or surgery of this joint is well known. Frequently such instability results in additional injury to the menisci or joint ligaments so that the dysfunction tends to be continuous and even progressive. The symptom of which the patient most often complains is an unpredictable giving away of the knee when weight is borne on it. This usually occurs when the knee is slightly flexed, as on going up or down stairs, walking down a slope, or even standing on the involved leg. Inasmuch as this symptom is that of quadriceps weakness it is the purpose of this paper to call attention to the value of a specific type of quadriceps exercise in correcting this weakness and thereby producing knee stability.

The principle of progressive resistance exercises, introduced by DeLorme,<sup>1</sup> and since employed by many others<sup>2</sup> differs from conventional pulley weight exercises in several important respects. With the progressive resistance exercises the quadriceps is loaded uniformly throughout the arc of motion. In pulley weight exercises the weight load on the quadriceps diminishes with progressive extension of the leg; specifically, it varies with the sine of the angle subtended by the pulley rope and the tibia-femur axis.<sup>1</sup> Since the vastus internus component of the quadriceps acts most powerfully in the last 15 degrees of leg extension and functions as a stabilizing agency in complete extension, pulley weight exercises fail to load the muscle at the most vulnerable point so far as its knee stabilizing function is concerned.

With progressive resistance exercises emphasis is placed on power development by progressively loading the muscle in the manner to be described subsequently. In contrast, endurance is developed by pulley weight exercises through repetition of movement against a constant weight load. The known weakness of the quadriceps in knee injuries requires for its correction a power or strength-building exercise rather than one which develops endurance without muscle power.

## Material

This series is composed of 82 cases referred to the Department of Physical Medicine, Watkins Memorial Hospital, University of Kansas. Without selection or exclusion these cases were classified into one of three groups:

Group I. Injury Without Operation. Fifty-eight

cases; 53 males and five females. All had sustained injury to the knee joint and related structures as a result of sports activity or direct trauma. Treatment of the type to be described was instituted six weeks or longer after injury, although a few cases were treated a week after injury and a few several years after injury.

Group II. Post-operative. Sixteen patients; all males. Meniscectomy had been performed in 11 cases, patellectomy in two cases, removal of a Baker's cyst in two cases and surgery for osteochondritis dissecans in one case. The majority were seen three to four months after operation.

Group III. Miscellaneous. Eight patients; six males and two females. Two had residual weakness following fracture of the neck of the femur. Two had traumatic arthritis, the sequel of old injury to the knee. One had had poliomyelitis many years previously. Two patients had chronic arthralgia of the knee of undetermined etiology. One patient had multiple sclerosis.

All patients objectively demonstrated gross atrophy of the quadriceps. All demonstrated instability of the knee joint in varying degrees. All patients subjectively had the common complaint of a feeling of weakness in the affected knee joint and insecurity on weight bearing. Although the majority were college age adults, six of the total were beyond the age of 40 and one was 85 years of age.

## Method

Each exercise period was preceded by immersion of the extremity in the whirlpool bath for 20 minutes at a water temperature of 105 degrees. This was done not only for the purpose of providing the active hyperemia necessary for the exercises to follow, but also to facilitate relaxation from any muscle tightness or spasm that might be present.

The exercises proper were carried out according to a rather rigid routine. All patients received the same general instructions as follows:

1. Never begin exercise with heavy weights. Start with light weights and increase.
2. Raise and lower the weights slowly at the same rate of speed.
3. Avoid sudden jerky motions.
4. Practice complete flexion and extension with each contraction.
5. Pause between contractions and momentarily relax the muscle.
6. Concentrate on the muscle being exercised.
7. Never do more than 10 contractions with one weight.

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8. Total number of contractions for any one exercise period should be between 40 and 80.
9. Exercise only five days a week.
10. Exert the maximum effort once a week.

In performing the exercises the patient was seated on a table with a pad or sandbag under the distal portion of the thigh as shown in Figure 1. This position was necessary since it has been shown<sup>3</sup> that an angle of approximately 15 degrees between the femur and the top of the table is the position most advantageous mechanically for quadriceps action. The metal "boot" was then strapped to the shoe and the exercise sequence begun. The beginning and mid-point of the exercise sequence are shown in Figures 1 and 2.

The first series of 10 contractions were accomplished without weights attached to the boot. Weights in increasing amounts were then added, 10 contractions being accomplished for each weight. Ultimately a weight was found which the individual could just lift 10 times; a greater weight could not be lifted the requisite number of times. This weight value was termed the Ten Repetition Maximum and represented a limit for the day's exercise. This same sequence was carried out Monday through Thursday, beginning each exercise period without weights and exercising the muscle against the same weight increments through the Ten Repetition

Maximum. On Friday the same procedure was carried out as for the preceding days except that the effort was made to establish a new Ten Repetition Maximum. After the Ten Repetition Maximum had been concluded, the exercise sequence was continued, lifting each weight increment twice until a weight value was found which could be lifted but one time. This weight value was termed the One Repetition Maximum and served as an index of the maximum strength or power of the muscle at that time. Thus on Friday of each week the Ten and One Repetition Maximum were reestablished. The Ten Repetition Maximum thus found constituted the new maximum for the following week's exercise. No exercise was done Saturday or Sunday.

It should be noted that the submaximum effort (Ten Repetition Maximum) was exerted five days weekly; the maximum effort (One Repetition Maximum) was exerted once weekly. This rigid routine provided a satisfactory control over the exercise dosage which was essential to avoid the possible harmful effects of over-exercise as well as the wasted effort of under-exercise. A careful record of the type shown in Table I was maintained for each patient. This was done primarily for the control needed for the exercise dosage but also served as a valuable psychological means of maintaining the patient's interest in his progress.

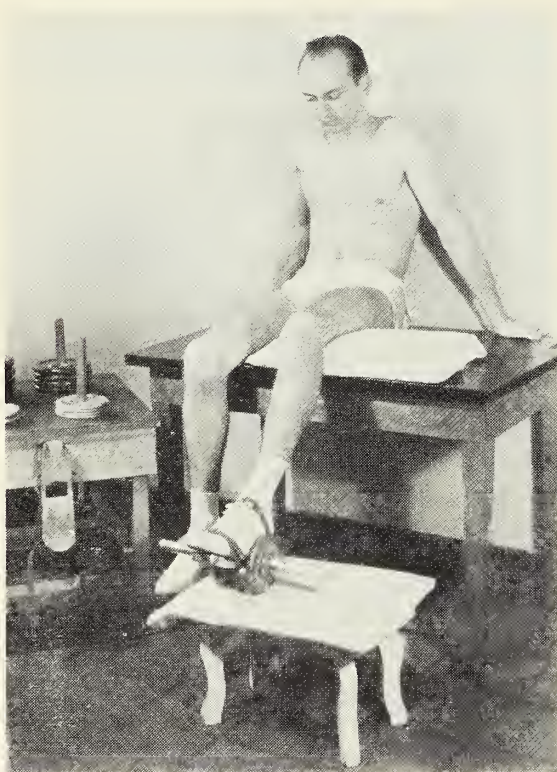


Figure 1. The beginning of the exercise sequence.

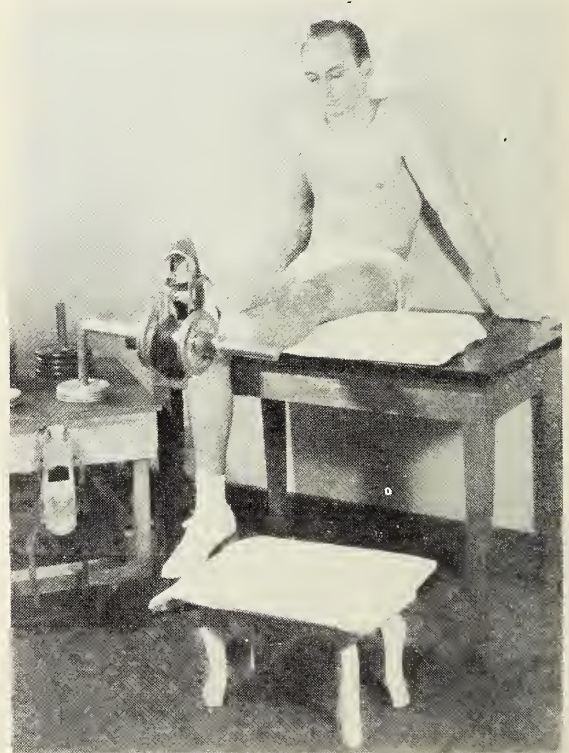


Figure 2. The mid-point of the exercise. Emphasis is on complete extension of the leg.



## Results

The results may be tabulated in summary form as follows:

Group	Number of Cases	No Improvement	Improvement	Functionally Normal
I. Injury	58	2	13	43
II. Post-Operative	16	0	4	12
III. Miscellaneous	8	1	6	1

In Group I, the two cases which failed to improve were subsequently found at operation to have tears of the menisci. These cases are not included in Group II for the sole reason that they had received progressive resistance exercises prior to surgery and would thus have differed from the remainder of the group in this respect. In Group III, the patient who failed to improve had traumatic arthritis following injury to the joint sustained a number of years previously. The joint consistently remained painful on exercise and treatment was electively abandoned after three week's trial.

Table I illustrates the improvement in strength of the quadriceps in a typical case. There was nothing distinctive about the response among the patients of the three groups.

The 85-year-old patient is worthy of special comment. Twenty-five years previously she had sustained a fracture of the neck of the femur. Subsequent aseptic necrosis of the head of the femur left a residual  $2\frac{1}{2}$  inch shortening of the affected leg. With her advancing years, ambulation had become increasingly difficult to the point of virtual incapacity at the time she was first seen. No attempt was made to carry the exercise dosage to either the One or Ten Repetition Maximum, but rather a dosage was chosen which was felt to be safe, and the effort was made to increase this weekly. The increase in strength noted in Table II enabled ambulation at will without aid other than a cane for purposes of stability.

With the exception of the three cases noted above in which no clinical improvement was noted, all

TABLE I

Name: H. V. S. Age: 18 Height: 6' 2" Weight: 215

Diagnosis: Sprain, medial collateral ligament, knee, left, 9-26-49.

No. of Contractions	Weights Lifted Week of							
	2-4-50	2-16-50	2-23-50	3-2-50	3-14-50	3-23-50	3-30-50	5-4-50
10	0	0	0	0	0	0	0	0
10	5	$7\frac{1}{2}$	$7\frac{1}{2}$	$12\frac{1}{2}$	15	15	15	20
10	10	$12\frac{1}{2}$	$12\frac{1}{2}$	$22\frac{1}{2}$	25	25	25	30
10	$12\frac{1}{2}$	15	$17\frac{1}{2}$	25	30	35	35	40
10 R.M.	$12\frac{1}{2}$	15	$17\frac{1}{2}$	25	30	35	35	40
1 R.M.	15	$17\frac{1}{2}$	20	30	35	40	40	45
Rt. Quadriceps								
10 R.M.	$17\frac{1}{2}$			25		35		40
	20			30		40		45

TABLE II

Name: Mrs. C.E.B. Age: 85 Height: 5' 2" Weight: 105

Diagnosis: Atrophy, disuse, quadriceps, left, secondary to fracture, old (1925), femur, neck, left.

Contractions	Weights Lifted Week of					
	10-31-47	11-7-47	11-21-47	11-28-47	1-6-48	1-12-48
10	0	0	0	0	0	0
10	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	3	3	3
10	3	3	3	$4\frac{1}{2}$	$4\frac{1}{2}$	6
10		$4\frac{1}{2}$	$4\frac{1}{2}$	6	6	$7\frac{1}{4}$
10		6	6	$6\frac{5}{8}$	$6\frac{5}{8}$	$7\frac{7}{8}$
10			$6\frac{5}{8}$	$7\frac{1}{4}$	$7\frac{1}{4}$	$8\frac{1}{2}$
10			$7\frac{1}{4}$	$7\frac{7}{8}$	$8\frac{1}{2}$	$9\frac{1}{8}$

patients increased the strength of the quadriceps by at least 100 per cent during the first month of treatment. In those instances wherein muscle atrophy was severe, the increase in strength was much more than this, a four- to five-fold increment frequently being attained during this period. This improvement in strength was reflected clinically in terms of less pain in and swelling of the knee, greater stability of the knee in walking or standing and lessening of the feeling of insecurity in use of this member. In the majority of instances apparent recovery resulted.

It should be emphasized that there was no alteration in the anatomical changes which had been produced as a result of the injury. A joint which was lax as a result of ligamentous injury remained lax when the quadriceps was at rest. Normal use of the hypertrophied muscle, however, resulted in functional stabilization of the knee joint.

#### Discussion

There may be question as to whether the exercise procedure was the cause of or coincident with recovery. The long treatment period invites such suspicion. However, inasmuch as these patients all demonstrated weakness, pain, swelling and instability of the joint prior to treatment, regardless of the interval between injury and treatment, and 70 per cent of the group were completely asymptomatic before the conclusion of the treatment course, the conclusion seems valid that the treatment procedure was responsible for this improvement.

The procedure is quite simple and easy to accomplish. In a smaller series of cases not included in this study, equally good results were obtained by the use of apparatus readily constructed at home and a program carried out entirely at home. The boot, its straps and weight bar may be substituted for by a shoe with a broomstick cleated to the instep just ahead of the heel. The cast iron and aluminum weights were satisfactorily replaced by bags or sacks in which known amounts of dry sand were placed. A heating pad or simple massage provided a fairly good substitute for the circulatory stimulation of the whirlpool bath. The apparent complexity of the apparatus is, therefore, no bar to the home use of this program. There is, however, no substitute for the rigid employment of the exercise sequence and the patient must be willing to keep the necessary

records in order to control the exercise dosage.

The effect of cross education, first noted by Hellebrandt and her associates,<sup>4</sup> is evident in the figures shown in Table I. Apparently as a result of facilitation at the spinal cord level, the unexercised extremity will exhibit a moderate increase in strength similar to that noted in the involved extremity but of a lesser degree. This finding emphasizes the role of the neural component of muscle action and supplies additional proof of the need for heavy weight loads which call forth the greatest response effort on the part of the neural mechanisms.

#### Conclusions

Eighty-two patients with the common complaint of pain in and instability of the knee were subjected to progressive resistance exercise of the quadriceps.

Fifty-six patients (71 per cent) achieved clinical remission by this means. Twenty-three patients (28 per cent) were improved. Three patients (four per cent) were unimproved and two of this group ultimately were operated on with removal of a fractured meniscus.

The large majority of the patients were college age adults, healthy except for the knee disability. The few older patients included in the series responded as well to the procedure as did the younger group.

The effect of cross education was repeatedly noted throughout the exercise series.

The exercise program, although rigid in its employment, was easy to incorporate into the daily activities of the patient and necessitated only the keeping of accurate records and the willingness to engage in a treatment procedure which covers a reasonably long period of time.

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# The Use of the Laboratory in the Diagnosis of Liver Disease\*

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Laboratory aids to the diagnosis of disease of the liver or so called "liver function tests" have been proposed and used in great number and variety. The experience of many workers in the field has led to relatively standard interpretability of these aids. From the many "tests" a group can be selected for performance by a good clinical laboratory and be of practical aid to the clinician. This report proposes such a group.

Before this choice, several limiting qualifications must be stated. No single liver function test can stand alone as of significance; each can be positive because of disturbance of physiology elsewhere than in the liver, each can be negative in the presence of extensive liver damage. Therefore, a group or spectrum of tests must be made, both to elicit selective disturbance of liver function and to reduce error by numerical probability. Tests vary in sensitivity and likelihood of positive result with varying diseases or stages of disease. The choice of tests in any specific instance requires knowledge of the basic physiology of the liver and its alteration in disease. To be useful to the practicing clinician all tests should be readily adaptable to the average clinical laboratory and should be referred to with reasonable frequency in the literature upon liver disease. Where a substance is offered to the liver for clearance (tolerance tests), one occurring in the usual metabolic or excretory function of the liver is preferred to one foreign to its usual economy.

Some activities within the liver do not lend

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themselves to ready technics of laboratory observation. Circulatory phenomena, regulations of circulating blood volume and body heat, are such functions. The endothelial lining of the sinusoids may affect the metabolism of blood pigments, blood proteins or the tolerance of foreign dyes, but this activity is not independently measurable. The embryonal function of blood formation is obviously not of interest here.

Liver function tests then are essentially dependent upon the activities of the parenchymal cell-endothelial lining combination or upon flow of excretion through the biliary tree. They measure alteration from the normal of substance offered to the body, substances influenced by parenchymal liver cell activity.

Knisely's schematic drawing of the frog liver lobule<sup>3</sup> (Figure 1) is a sound anatomic diagram upon which a conception of function can be based. If the magnification, so to speak, of this diagram be increased and the field reduced a single parenchymal cell can be seen adjacent to the sinusoid and blood stream on the one hand and the bile canaliculus on the other (Figure 2).

Metabolites are received by this cell from the blood. They are there usually changed by the complex physico-chemical functions of the cell to be excreted into the biliary tree, returned to the circulation in altered form, or stored against subsequent metabolic demand.

Interference with function can be seen to result from injury to the cell by inflammation as in infectious hepatitis or toxic damage, by obstruction of excretory flow as in choledocholithiasis, by reduction of blood flow and tissue oxygen as in passive congestion, or by inadequate supply to the cell through alimentary insufficiency or qualitative starvation.

These types of liver injury are seen more often in combination than singly. Inflammation about the parenchymal cell, by contiguous spread and edema,

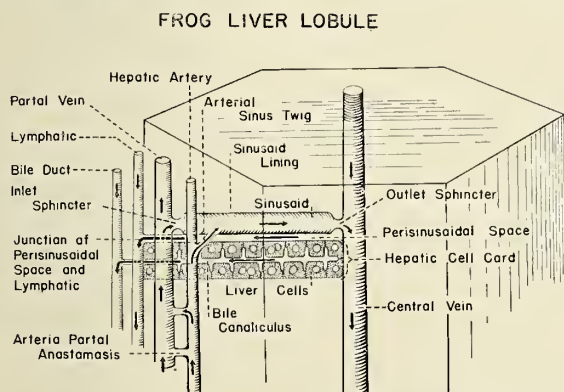


Figure 1. Diagram courtesy of M. H. Knisely.<sup>3</sup> Anatomical relationships of the living liver lobule.

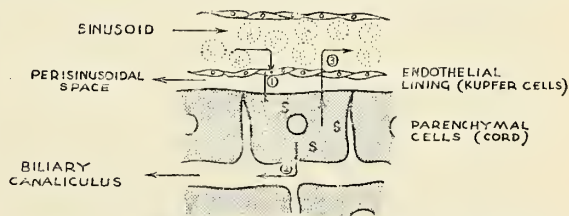


Figure 2. Schematic relation of parenchymal cell and sinusoid. Arrow (1) indicates progress of metabolites from sinusoidal blood stream via endothelial lining to parenchymal cell. Arrow (2) indicates excretion by parenchymal cell into biliary tract. S indicates storage within parenchymal cell. Arrow (3) indicates return of stored or altered metabolites to circulation.

can obstruct excretory flow or allow resorption of bile through injury primarily about the biliary canaliculae and periportal radicles. Distal obstruction, through back pressure, will initiate similar resorption of bile and, if prolonged, result in damage to the parenchymal cell. Impaired blood flow and cellular nutrition must be present in varying degree. When the poorly understood selective sensitivities to injury of the multiple metabolic functions within the parenchymal cell are considered the need for multiple laboratory observation is plain.

These tests have long been divided into the excretory, those concerned with bilirubin behavior or excretion of foreign dyes, and metabolic, primarily of the handling of protein, fat, and carbohydrate. Many other metabolic elements, vitamins, hormones, minerals, inorganic salts and enzymes, are affected by liver cell function. Foreign organic compounds are detoxified, and proteins concerned with the mechanism of blood clotting are synthesized. Several of this miscellaneous group lend themselves to useful laboratory observation.

Chart 1 groups some of these tests by function and by sensitivity, feasibility in the average laboratory, and frequency of reference within the literature. Many proposed methods have not been included. Those chosen for further discussion are in italics.

In the main these tests have been thoroughly reviewed in recent literature<sup>1,4,6,7,13,14</sup> with adequate reference to technic. Watson and Hoffbauer<sup>14</sup> organized tests into groups constituting laboratory surveys termed profiles. The choice of tests below is patterned after that of Watson and Hoffbauer. The arrangement is similar, and their normal values are used. Modification consists of incorporating all tests into a single hepatogram, reducing the number of tests used, realignment of the circumstances of their application, and the addition of the oral five-hour glucose tolerance curve. In the experience of the author this modification has proved practical in a small laboratory and furnishes excellent diagnostic and prognostic aid to clinical evaluation.

The excretory tests chosen are:

#### A. Bile Pigments

1. Urinary Bile by the Harrison Spot Method as positive or negative (Barium Strip Modification).

2. Urinary urobilinogen, two hour afternoon sample, expressed in Erlich units.

3. Serum bilirubin in mg. per cent; direct acting read at one minute, total at 30 minutes—recorded as total less the one minute component.

Watson and Hoffbauer<sup>14</sup> discuss these tests related to bile pigments at length. They present the cycle through which urobilinogen is represented to the liver by the portal circulation and can express

Chart 1. Classification of liver function tests in excretory and metabolic groups by sensitivity, feasibility in the clinical laboratory, and comparability in literature. See text. Those italicized are discussed in some detail.

"TESTS"	EXCRETORY		METABOLIC			
	Bile Pigments	Foreign Substance Clearance	Protein	Carbohydrate	Fat	Other
CATEGORY						
Relatively sensitive. Feasible in clinical laboratory. Commonly comparable in literature.	Blood Bilirubin <i>1" Direct</i> <i>Total—1"</i> Urine Bile ( <i>Harrison Spot</i> ) (Methylene Blue) <i>Urine Urobilinogen</i>	<i>Bromsulf-</i> <i>alein.</i>	<i>Cephalin</i> <i>Flocculation</i>  <i>Thymol</i> <i>Turbidity</i>	<i>Oral</i> <i>5 Hour</i> <i>Glucose</i> <i>Tolerance</i>	<i>Cholesterol:</i> <i>Cholesterol</i> <i>Ester</i> <i>Ratio</i>	<i>Prothrombin</i> <i>Time and</i> <i>Response to</i> <i>Vitamin K</i>
Very sensitive. Too difficult for routine use. Good research tools.		Bilirubin	Electrophoresis of serum proteins Globulin Fractionation.	Lactic Acid Clearance		Blood Coproporphyrin
Useful—but duplication of first category.		Rose Bengal	Colloidal Red Colloidal Gold Zinc Sulfate Turbidity.			
Less accurate Less sensitive Less valuable duplicate.	Icteric Index  Van Den Berg		Takata Ara <i>Serum Albumin</i> <i>Serum Globulin</i> Benzoic Acid conjugation.	Galactose Tolerance  Levulose Tolerance		Serum Iron Serum Vitamin A 17 Keto-steroid excretion after androgen
Not a test of parenchymal function but useful in differentiation of jaundice.	Fecal Urobilinogen				<i>Serum</i> <i>Total</i> <i>Cholesterol</i>	<i>Serum</i> <i>Alkaline</i> <i>Phosphatase</i>



both excretory and metabolic activity. They point out that urinary bile may be present early in liver damage before serum bilirubin is appreciably increased. They review a conception of the source of direct and indirect acting serum bilirubin, an increase in the immediate reacting component measuring bilirubin and suggesting cholangiolar damage, an increase in the delayed reacting component measuring bilirubin-globin and suggesting retention jaundice.

Schaffner, Popper and Steigman<sup>12</sup> feel that the partition of prompt and delayed bilirubin is of little differential value in frank jaundice, that the explanation of the behavior of the two components involves the Kupffer (endothelial lining of sinusoids) cells rather than being phenomena of regurgitation versus retention. In the interpretation of these tests the possibility of prehepatic jaundice from excessive blood destruction or the absence of bile from the intestine because of complete obstruction must be considered. In either instance the measurement of fecal urobilinogen will clarify the question; less than 10 Erlich units per 100 gm. of feces indicates complete biliary obstruction, greater than 100 units suggests excessive blood destruction.

#### B. Foreign dye clearance.

1. Bromsulfalein retention in serum at 45 minutes after I.V. administration of five mg. per kilo of body weight.

The performance of this test is standard and well known. Its sensitivity compares well with any additional tests performed. It should be omitted in the presence of jaundice. Clearance of added pure bilirubin would be preferable as a substance normally handled by the liver; the author has elsewhere noted it as the most sensitive of excretory tests,<sup>10</sup> but expense and difficulty of preparation preclude its routine use.

The metabolic tests chosen are:

#### A. Protein

1. Cephalin cholesterol flocculation at 48 hours expressed as plus, +, ++, +++, or +++++.
2. Thymol turbidity in units.
3. Serum albumin and serum globulin in mg. per cent.

Two flocculation-turbidity procedures are chosen since there is evidence that they reflect different phases of fractional serum globulin abnormality.<sup>6, 11</sup> One may give aid where the other does not. Serum albumin or globulin levels are less sensitive to liver damage but their disturbance can suggest a greater extent of functional impairment. The determination of the electrophoretic curve of serum proteins<sup>9</sup> could well replace all other protein determinations as tests of liver function in accuracy and sensitivity, but the method is not yet applicable to the usual clinical laboratory. Turbimetric determinations may

offer a feasible substitute.<sup>8</sup> In the author's experience the conjugation of sodium benzoate and glycine to form hippuric acid has not shown the sensitivity or general usefulness to warrant its inclusion.

#### B. Carbohydrate

1. The standard oral five hour glucose tolerance test (half hour observation omitted).

The usefulness of this procedure has been recalled by Moyer and Womack.<sup>5</sup> If persistence of hyperglycemia at two hours be taken as abnormal this is the most sensitive of the metabolic group. Its apparently consistent correlation with the other tests here chosen will form the subject of a later report. It is obvious that disturbance in sugar tolerance can reflect disease elsewhere than in the liver, but this warning need serve only to reiterate the principle of multiple testing. The standard test is a routine function of any laboratory and can well replace the galactose tolerance procedure as a test for liver function or in the differential diagnosis of jaundice. It certainly meets the preference for a metabolite usual to the economy of the liver.

#### C. Fat

1. Serum cholesterol esters (esterified cholesterol) in ratio to total serum cholesterol.

This is the only commonly used expression of lipid metabolism in the study of parenchymal cell function. Normal cholesterol esters range about 65-70 per cent of total cholesterol.<sup>2</sup> The ratio is reduced in parenchymal disease. (This is the most difficult of the laboratory analyses chosen and the method must be rehearsed by laboratory personnel before it is dependable.)

#### D. Miscellaneous Metabolic

1. Prothrombin Time, Quick one stage method in per cent of normal.

As change in serum albumin and globulin, prothrombin time is not sensitive to slight or moderate degrees of disturbed liver function. Its determination is similarly valuable to imply, when reduced, more extensive degree of damage. If, further, a reduced prothrombin time fails to increase after parenteral administration of synthetic Vitamin K, serious liver damage is more clearly implied. It must be held in mind that the presence of free bile in the small bowel is necessary to absorption of the precursors of prothrombin, a fact highly important in biliary surgery.

Tests not of hepatic function, per se, are:

1. The use of the determination of fecal urobilinogen has been discussed above.
2. Serum total cholesterol may be elevated in biliary obstruction or cholangiolar damage.
3. Serum alkaline phosphatase in Bodansky units. The normal of four units is usually clearly elevated to levels of 15 or higher in bile duct obstruction and/or serious cholangiolar damage.

Abnormality in these elements may help to clarify the nature of jaundice when initial laboratory survey shows increases in serum bilirubin but no clear pattern of damage to metabolic function.

Watson and Hoffbauer<sup>14</sup> report the level of blood coproporphyrin to be increased in persistent liver damage following infectious hepatitis after other observations have become negative. Serum iron, serum Vitamin A, and 17 keto steroid excretion are noted in Chart 1 to imply the wide range of laboratory observation possible in the study of liver disease.

The tests chosen, and italicized in Chart 1, have been arranged to constitute an hepatogram on a single hospital chart sized sheet (Figure 3). Group 1 is requested initially when liver disease is suspected: Urine Bile, 1" and T-1" Serum bilirubin, two hour urine urobilinogen, cephalin flocculation, thymol turbidity, and bromsulfalein tolerance. The latter is omitted in the presence of jaundice. These cover the excretory range and include the flocculation tests of serum globulin alteration. They are relatively sensitive and selective. They should indicate the existence of impaired function when ordinary laboratory methods will do so. If the first group indicates any degree of damage, Group 2, cholesterol ester ratio to total cholesterol and sugar tolerance curve, is then determined. Positive results confirm the

laboratory evidence of parenchymal disease found in Group 1.

Where jaundice is present Group 4, total cholesterol and alkaline phosphatase, becomes valuable. They are both usually increased in obstructive jaundice or marked cholangiolar damage in hepatitis. In such instance increase in direct reacting 1" serum bilirubin would be expected. In retention jaundice these increases are not characteristic. It must be remembered that pure obstructive or pure retention jaundice seldom exist. Back pressure and/or secondary cholangitis will result in parenchymal cell damage. Parenchymal inflammation extends to the canalicular or early cholangiolar biliary tree with local obstruction, injury and extravasation of "direct" bilirubin into the perisinusoidal lymphatic space. Early in jaundice liver function survey can give selective diagnostic information with rise in bilirubin and alkaline phosphatase with obstruction on the one hand and rise in bilirubin-globin and positivity of the more sensitive metabolic tests with primary parenchymal disease on the other. Later, as one type of injury extends to and merges with the other, tests are of less differential value.

When severe disease is obvious both clinically and by the tests already performed as above, Group

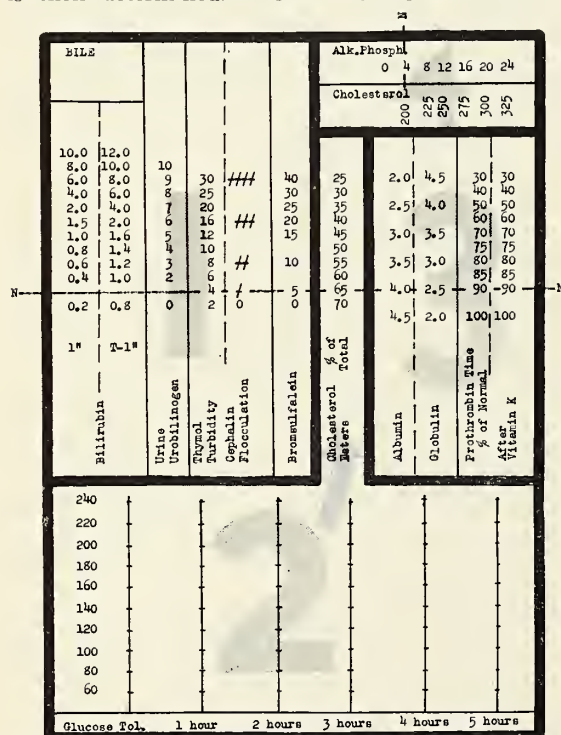


Figure 3. Hepatogram. Group 1: Urinary bile, direct acting (1") and delayed (T-1") bilirubin, urinary urobilinogen, thymol turbidity, cephalin cholesterol flocculation, and bromsulfalein clearance. Group 2: Five-hour glucose tolerance, per cent of cholesterol esters. Group 3: Serum albumin and globulin, prothrombin time in per cent of normal and re-observation after Vitamin K. Group 4: Alkaline phosphatase, serum total cholesterol. See text for detail and application.

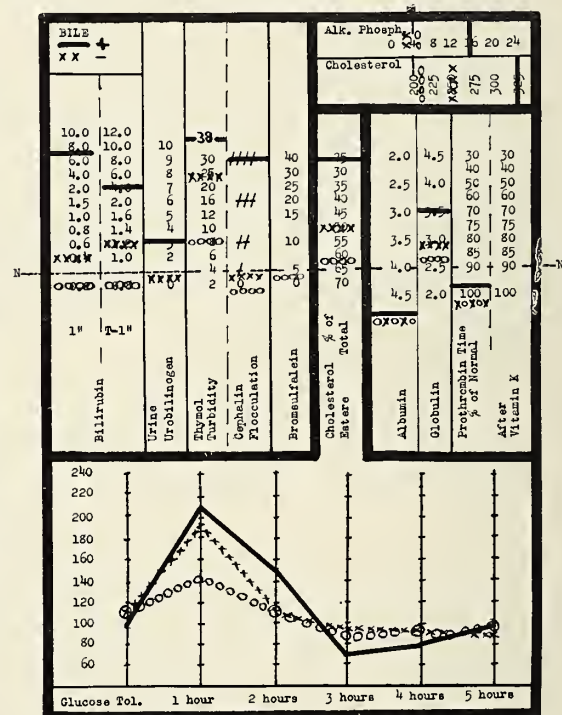


Figure 4. Male, age 29. Malaise, fever, anorexia and dark urine for 10 days. Yellow sclera for two days. Afebrile on admission. Moderate clinical jaundice. Liver tender but not enlarged. Solid line indicates laboratory findings of admission survey. Diagnosis: Infectious hepatitis with cholangiolar damage.

Treated by bed rest, diet, I.M. liver extract, methionine and choline. Asymptomatic in three weeks. Crosses indicate interval laboratory survey.

Partial bed rest, diet continued. Discharged after seven hospital weeks, two months following onset of illness. Circles indicate final laboratory survey. Note persistence of positive thymol turbidity.



3, serum albumin and globulin and prothrombin time, confirms severe damage. This is even more evident if parenteral Vitamin K (10-20 mg.) fails to improve prothrombin time. These two less sensitive observations have been useful mainly in helping to estimate the degree of damage in cirrhosis of the liver.

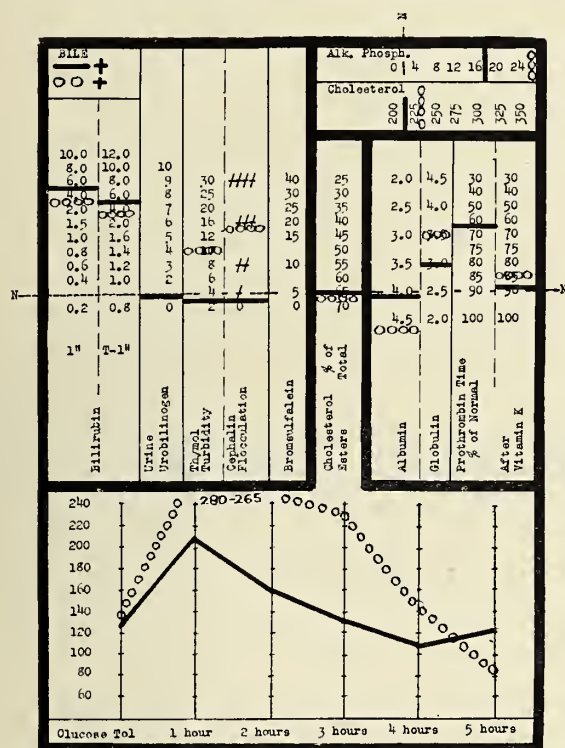
The author has found this hepatogram more valuable in following the progress of hepatic disease than in diagnosis, which more often than not can be made clinically. As more extensive damage is present the initial group, then cholesterol ester and sugar tolerance, then serum albumin-globulin and prothrombin time become abnormal. The reverse of this order is roughly true with recovery, though the vagaries of laboratory damage patterns offer many exceptions.

Mild to moderate cases of infectious hepatitis seem to recover quite rapidly clinically. The danger of relapse with too early activity has become well known with the increased incidence of this infection during and following World War II. Better evidence

than clinical of persistent illness can here be had with persistent laboratory evidence of damage. When jaundice has subsided it is well to add bromsulfalein tolerance where previously omitted. It is the author's practice to maintain the patient recovering from infectious hepatitis on 24, 20 or 16 hours bed rest with restricted activity until laboratory evidence of damage has largely subsided. The exception is that the flocculation tests, cephalin cholesterol and thymol turbidity, more usually the latter, often remain positive in moderate range long after medical invalidism has ceased to be practical, economically permissible, or psychologically advisable.

Three hepatograms are shown illustrating their application in infectious hepatitis (Figure 4), obstructive jaundice from stone (Figure 5) and cirrhosis of the liver (Figure 6). Brief clinical information is appended.

This report has described the use of laboratory information in liver disease. There has been no intent to substitute the laboratory for clinical acumen. A history of grippal illness with anorexia and



the finding of a tender lower right costal area on first percussion in infectious hepatitis, colic and acholuric stool in choledocholithiasis, and spider nevi with collateral veins in the flank in cirrhosis are more than worth the weight of all laboratory findings. The great value of needle biopsy of the liver when indicated is outside of the scope of this discussion. The liver can be heavily infiltrated with carcinoma without laboratory evidence of damaged function. As in all disease the experienced clinician uses the tools at hand in proper balance.

#### Summary

A choice of laboratory determinations in the study of liver disease has been outlined. They were chosen as particularly applicable to the facilities of a good clinical laboratory. An hepatogram for inclusion of results on one page is presented.

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## Kansas Medical Society Annual Meetings

1951

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# Primary Tumors of the Bladder: A Survey of 275 Cases\*

John W. Warren, Jr., M.D.\*\*

Wichita, Kansas

Bladder tumors have received a great deal of attention in recent publications in which the writers have discussed in detail the various methods of treatment. We present herewith an analysis of a series of 275 consecutive cases of primary neoplasms of the bladder treated on the Urological Services of the Pennsylvania and Bryn Mawr Hospitals. Its purpose is to present the data concerning this disease so that the patient with a bladder tumor may be better evaluated statistically as to type of tumor and prognosis, as well as the results of various types of therapy. The case histories were taken in chronological order, omitting those of patients who refused operation or who were referred only for consultation. Thirty-four cases were inoperable for reasons to be discussed later and 77 cases could not be followed adequately. These have been omitted in analyzing the results of treatment.

Our series consisted of 224 (82 per cent) males and 51 (18 per cent) females illustrating the greater predisposition of the male bladder to tumor formation. It is a disease of later life; 216 or 79 per cent of the cases in this series occurred between the ages of 51 and 80 years. About 35 per cent occurred in the seventh decade (Figure 1). The oldest patient was 88 years of age and the youngest, 16 months.

Bladder tumors will be found in approximately 50 per cent of patients complaining of intermittent massive hematuria. The most common presenting symptom was gross hematuria found in 235 cases or 85 per cent. This was frequently accompanied by dysuria, strangury, and frequency during the bleeding periods and often the patients had no subjective symptoms in the non-bleeding periods. The hematuria was usually intermittent. Frequency and dysuria without hematuria were noted in 22 cases or eight per cent. Suprapubic pain alone was noted in three instances, penile pain in a solitary case,

left costovertebral angle pain and acute urinary retention in two cases; 10 cases were referred from other hospitals where treatment had been started and no presenting symptom was noted. The most unusual case presented complete anuria due to bilateral ureteral obstruction, generalized edema, associated with gross hematuria.

The duration of symptoms was variable, extending from six hours to 17 years. Forty-four per cent of the patients were seen by us within three months of the first attack of hematuria, and 55 per cent within the first six months. Many of these patients were under the care of physicians who treated them medically. Coincidentally the hematuria stopped, as the disease is prone to do without therapy. It would seem that the medical profession as a whole still needs to be reminded of the seriousness of hematuria, and the necessity for complete urological survey when it exists.

Strangely enough, there seems to be no relationship between the duration of symptoms and the degree of malignancy of the tumors. In one instance an inoperable papillary carcinoma was found covering the entire trigone and infiltrating the musculature of the bladder wall with a history of hematuria of one month duration. Another patient had attacks of hematuria for 17 years and a papillary carcinoma Grade I was found. Figure 2 is a graphic description of the duration of symptoms for papillomata or papillary carcinoma Grade I and the more malignant infiltrating papillary carcinomas. The percentage of tumors for each group is almost identical for various durations of symptoms.

The diagnoses for the neoplasm fall into 11 groups: papillomata or papillary carcinoma Grade I; unclassified papillary carcinoma; papillary carcinoma Grade II, III, IV, and those not graded but which have infiltrated the musculature of the bladder; nodular carcinoma; flat carcinoma; adenocarcinoma; squamous cell carcinoma; and sarcoma.

An explanation of these various types would be

\*The author wishes to express his thanks to Leon Herman, M.D., Lloyd Greene, M.D., and Benjamin Hayllor, M.D., for permission to include their cases from the Pennsylvania and Bryn Mawr Hospitals in this report.

\*\*Department of Urology, the Wichita Clinic.

Age and type of tumor	16 mo.	21-30	31-40	41-50	51-60	61-70	71-80	81-90	
Papillomata		3	8	15	29	40	10	1	106
Infiltrating papillary carcinomata			5	18	39	55	37	2	156
Squamous cell carcinomata				3	3	1			7
Adenocarcinomata			1	2	1				4
Sarcoma	1						1		2
	<u>1</u>	<u>3</u>	<u>14</u>	<u>38</u>	<u>72</u>	<u>96</u>	<u>48</u>	<u>3</u>	<u>275</u>

Figure 1. Age incidence for the morphological types of bladder tumors.

in order. We consider all tumors of the bladder to be malignant or potentially malignant. Hence we call papillomata, papillary carcinoma Grade I. Due to changes in the pathological departments of the hospitals over the years, some of the carcinomas are graded according to Broder's classification, some as to their tendency to invade the muscle, and some with no classification. Nodular carcinomas are the more malignant papillary neoplasms, and the flat carcinomas are most malignant. The classification according to morphology included adenocarcinoma, squamous cell carcinoma, and sarcoma. The papillary neoplasms as a group are by far the most common, comprising 95 per cent of this series, or 262 cases (Figure 1). Low grade malignant papillomata (Grade I) compose 39 per cent of the total in this series. Four adenocarcinomas were seen, seven squamous cell carcinomas, and two sarcomas. The remaining 57 per cent of this series are the more malignant infiltrating papillary carcinomas. The relationship between the various tumors and the patient's age is shown in Figure 1.

Biopsies were taken for diagnosis when the bladder was exposed for treatment and occasionally cystoscopic biopsy was done. One hundred forty biopsies were taken. Cystoscopic biopsy was rarely done for two reasons: (1) the degree of malignancy may vary markedly from different sections of the same neoplasm making small biopsy specimens inadequate, and (2) the cystoscopic appearance of bullous edema surrounding a broad base of tumor and necrosis of the neoplasm is good evidence of malignancy. The majority of the cases that were not biopsied were considered to be Grade I papilloma with some question as to whether they were cancerous or precancerous lesions. The remainder were

those which were inoperable when first seen, either by evidence of metastasis or complete fixation of the bladder.

Most tumors are found at the base of the bladder. This is shown in Figure 3 which is a schematic drawing of the locations of neoplasm of the bladder in which each cross represents 10 bladder neoplasms.

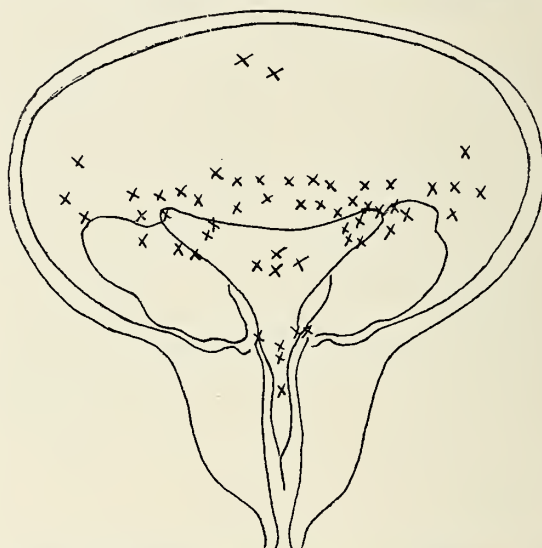


Figure 3. Diagrammatic representation of the predominant sites of bladder tumors. Each cross represents 10 tumors. Anterior and superior walls are omitted.

Ninety neoplasms on the anterior wall including the summit could not be shown in this diagram. Figure 4 shows the locations in the bladder of the 629 tumors. Adenocarcinomas are thought to be inclusions in the bladder and are found either at the trigone or near the urachus. In this series, none was seen in the latter position. The squamous cell neo-

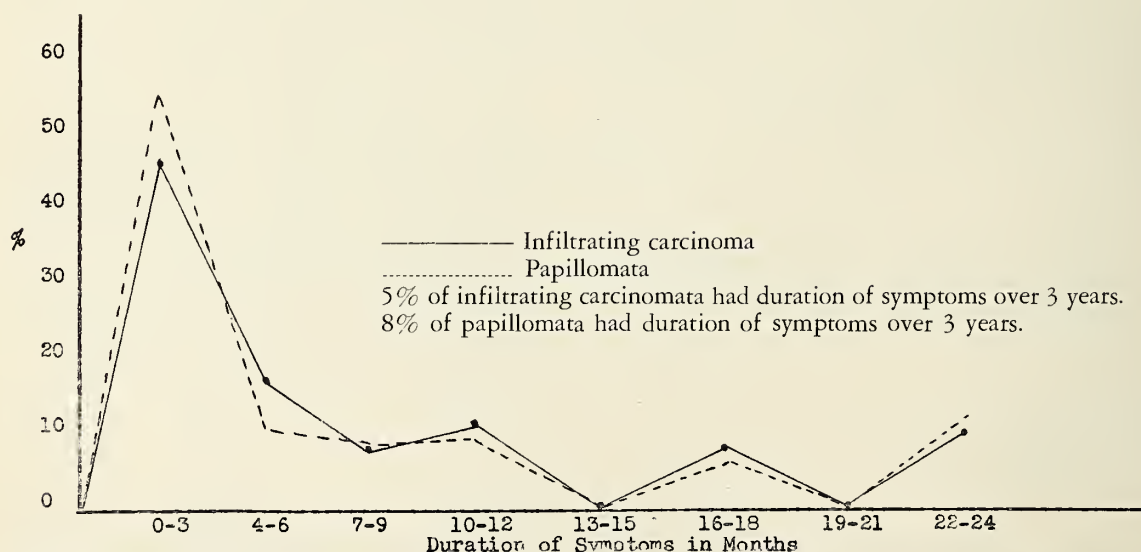


Figure 2. Duration of symptoms comparing papillomata with frankly malignant tumors. Note the duration of symptoms compares very closely for both.



<i>Position of tumors</i>	
Above right ureteral orifice	42
Below right ureteral orifice	21
Lateral right ureteral orifice	27
Medial right ureteral orifice	21
Above left ureteral orifice	56
Below left ureteral orifice	15
Lateral left ureteral orifice	32
Medial left ureteral orifice	20
Right lateral wall	34
Left lateral wall	46
Posterior superior wall	24
Anterior superior wall	21
Left anterior wall	14
Right anterior wall	14
Outlet 12 o'clock	16
Outlet 3 o'clock	14
Outlet 6 o'clock	23
Outlet 9 o'clock	14
Superior wall	26
Central trigone	38
Posterior wall	98
Left superior wall	2
Right superior wall	0
Urethra	11
629 tumors	

Figure 4. Sites for 629 individual tumors.

plasmas were also trigonal in position in three cases, on the left lateral wall in one, posterior superior wall in one, and no description was given in one case. The location of one sarcoma was not given. The other was on the right lateral wall. Two of the patients presented a bladder diverticulum concealing a papillary carcinoma. Partial ureteral obstruction from the bladder tumor was seen 49 times. The right ureter was obstructed 19 times, the left ureter 24 times, and both ureters six times. This resulted in hydro-ureter and hydronephrosis of various degrees of the corresponding kidney as shown by intravenous urography.

Most of the patients had complicating pathology. Of those patients presenting themselves with a bladder tumor, 57 per cent or 155 cases had some other

pathological lesion, over half of which were urological in nature. The next most common complication was heart disease. The complete roster of complications is shown in Figure 5.

Many methods were employed in treating bladder tumors consisting of: cystoscopic fulguration; cystoscopic fulguration and implantation of radon seeds; cystoscopic resection and fulguration; cystostomy with fulguration; cystostomy with fulguration and transvesical irradiation; partial cystectomy; and total cystectomy with transplantation of the ureters to the skin or colon.

Seventy-seven cases could not be followed adequately for various reasons. The results of the complete follow-up of 198 cases are presented.

Eleven patients refused surgery. Thirty-four or 12 per cent of the total cases were inoperable for various reasons. In 25 patients the tumor had perforated the bladder wall, and distant metastases were found in two others. Two were in extremely poor general condition, making any surgery too hazardous to attempt. Four died before surgery could be attempted, two each from coronary occlusion and acute pyelonephritis with uremia. The tumor in one other case had penetrated into the rectum in a vesicorectal fistula. The balance of 153 cases received treatment.

#### Papillary Carcinoma

The end results of therapy of papillary carcinomata Grade I were good, regardless of the type of treatment used. Sixty cases have been followed to date. Nineteen of them have survived over five years without recurrent neoplasm at the present time. Fifteen more are alive with no tumor present less than five years, and four have died in less than five years from causes other than bladder neoplasm. Five died from other causes after five years. Two patients have survived without recurrent neoplasm for 20 years. It is interesting to note that one man was cystoscopically fulgurated elsewhere for a papillary carcinoma Grade I, 22 years before he was treated here for recurrent papillary carcinoma. Eight have died, the cause being directly attributable to the bladder tumor, two of them living seven years after the initial treatment. Nine are alive and have papillomata of the bladder necessitating frequent fulguration. One of the latter has lived 12 years since the initial treatment.

Recurrent papillomata are prone to be multiple and to occur at a site different from that of the original neoplasm. In this series of 71 cases, 44 or 62 per cent had recurrences. The largest number of tumors to be fulgurated at a single treatment is 14 and the largest total number treated is 32.

Figure 6 is a chart showing the results of the various types of therapy for 60 cases of this tumor.

#### Pathological Conditions Complicating Bladder Tumors

BPH	83	Lupus erythematosus	1
Asthma	2	Extrophy of bladder	1
Hypertensive cardiac disease	11	Bladder diverticula	7
Renal TB	2	Urethral stricture	2
Buerger's disease	2	Diabetes	7
Radium cystitis	1	Vesico-rectal fistula	1
Pagets disease	1	Vesico-vaginal fistula	1
Renal calculi	2	Epididymitis	3
Silicosis	2	Arteriosclerotic heart disease	37
Intestinal obstruction	1	Peptic ulcer	1
Hunner's ulcer	1	Hernia	4
Fibroids	2	Pyelonephritis	5
Nephroptosis	1	Ruptured bladder	1
Bladder calculi	4	Syphilis	1
Carcinoma of prostate	4	Carcinoma of rectum	1
Cholelithiasis	1		

Bladder rupture was through the tumor spontaneously.

Figure 5. The majority of the patients had one or more diseases in addition to a bladder tumor as would be expected in this age group.

## Results of Treatment of Infiltrating Papillary Carcinomas

Alive no tumor over 5 years	19
Alive no tumor under 5 years	15
Dead without tumor over 5 years	5
Dead with no tumor under 5 years	4
<hr/>	
$\frac{19 + 5}{60 - 19} = \frac{24}{42} = 57\%$	5-year "cures"

Figure 6. The results of therapy in infiltrating papillary carcinomas are good, regardless of the treatment used.

Twenty-four patients have survived tumor-free for five years or longer, 19 patients were treated less than five years. Thus, of the 60 cases of papillary carcinoma Grade I, the "five-year cure" rate is 57 per cent. There were no fatal cases from surgery in this group.

The results of therapy of the more malignant infiltrating papillary carcinomas are shown in Figure 7. It can readily be seen that the results of therapy in

the more malignant neoplasms of the 84 cases are disappointing.

Including all types of therapy there were only six patients alive with no tumor five years after treatment was instituted, and four others died from other causes after five years. There are 21 patients who were treated less than five years ago and three who have tumors of the bladder under five years. Forty-one have died from the neoplasm, only one living longer than five years, that one dying 13 years after the first treatment. Using the same method of computation as for papillomata the "five-year cure" rate is 16.9 per cent. There were 10 deaths following operation. Three resulted from pneumonia, one from pelvic thrombosis, two from cardiac failure, and four from pyelonephritis. There were no deaths from hemorrhage or surgical shock. These date back to the period before the advent of the sulfonamides and penicillin.

## Results of Therapy for Infiltrating Papillary Carcinomas of the Bladder

Partial resection of the bladder—9 cases			
Alive no tumor over 5 years	0	Dead no tumor over 5 years	0
Alive no tumor under 5 years	0	Dead no tumor under 5 years	1
	0%		
Transurethral resection and fulguration—7 cases			
Alive no tumor over 5 years	1	Dead no tumor over 5 years	0
Alive no tumor under 5 years	0	Dead no tumor under 5 years	2
	1		
	7-2 = 20%		
Cystoscopic fulguration—18 cases			
Alive no tumor over 5 years	1	Dead no tumor over 5 years	1
Alive no tumor under 5 years	3	Dead no tumor under 5 years	1
	2		
	18-4 = 14%		
Suprapubic fulguration and radon seeds—20 cases			
Alive no tumor over 5 years	1	Dead no tumor over 5 years	1
Alive no tumor under 5 years	1	Dead no tumor under 5 years	4
	2		
	20-5 = 13%		
Suprapubic fulguration—14 cases			
Alive no tumor over 5 years	1	Dead no tumor over 5 years	1
Alive no tumor under 5 years	0	Dead no tumor under 5 years	4
	2		
	14-4 = 20%		
Suprapubic fulguration and Phillips gun—7 cases			
Alive no tumor over 5 years	0	Dead no tumor over 5 years	1
Alive no tumor under 5 years	2	Dead no tumor under 5 years	0
	1		
	7-2 = 20%		
Cystoscopic fulguration and radon—4 cases			
Alive no tumor over 5 years	1	Dead no tumor over 5 years	0
Alive no tumor under 5 years	0	Dead no tumor under 5 years	1
	1		
	4-1 = 33%		
Suprapubic fulguration and phenol—1 case			
Alive no tumor over 5 years	1	100%	
Total 80 cases omitting the 4 cases of total cystectomy			
Alive no tumor over 5 years	6	Dead no tumor over 5 years	4
Alive no tumor under 5 years	7	Dead no tumor under 5 years	14
	$\frac{10}{80-21} = \frac{10}{59} = 16.9\%$		

Figure 7. The results are uniformly poor regardless of the treatment used.



There are three cases of papillary carcinoma Grade II who have lived five years. One other received an open fulguration and application of phenol to the bladder mucosa. He is alive five years later, and free from tumor. The third was treated by cystoscopic fulguration and is well nine years after treatment. One patient who had a Grade III papillary carcinoma is alive and well seven years following a partial cystectomy. No cases of papillary carcinomas, Grade IV, or nodular carcinomas are alive five years after treatment. One patient with flat carcinoma is alive with recurrent neoplasm six years after the cystoscopic implantation of radon seeds. There are no cases of papillary carcinoma invading the bladder musculature alive five years later regardless of treatment.

#### Adenocarcinoma, Squamous Cell Carcinoma, and Sarcoma

The adenocarcinomas show the same poor results. One patient was well for four and one-half years following a cystoscopic fulguration and implantation of radon seeds before he was lost from our records. One is free from tumor one and one-half years following a partial cystectomy and one died from pulmonary tuberculosis free from tumor, one year after a total cystectomy. A fourth died from the tumor 16 months following partial cystectomy.

The results of treatment of squamous cell carcinomas are similar. One case with exstrophy of the bladder died from extra-vesical causes seven years after the initial partial cystectomy. Two others who were followed succumbed to the neoplasm several months after operation. One sarcoma was inoperable with distant metastases. The other was treated by total cystectomy and died from the tumor in 22 months.

Because of the numerous methods of treatment employed in this series of the more malignant neoplasms, the number of cases for each type of therapy is too small to draw any definite conclusions. However, the percentage of "five-year cures" for each method is as follows:

1. Partial cystectomy—nine cases—10 per cent five-year cures.
2. Cystostomy and fulguration—14 cases—20 per cent five-year cures.
3. Cystostomy and fulguration with implantation of radon seeds—20 cases—13 per cent five-year cures.
4. Cystoscopic fulguration—18 cases—14 per cent five-year cures.
5. Cystoscopic fulguration and implantation of radon seeds—four cases—33 per cent five-year cures.

The number of cases shown above includes those treated less than five years. The percentage of five-year cures concerns only those treated more than five years ago.

The use of total cystectomy and transvesical irradiation is too recent to be included here.

#### Summary

1. An analysis of 275 primary tumors of the bladder has been presented with 198 follow-up studies.

2. According to our series, the patient consulting the urologist with a bladder tumor will probably be a male, between 60 and 70 years of age, complaining of intermittent gross hematuria which he has had about three months. There is better than an even chance he will have other pathology, half of which will be other urological diseases. The bladder neoplasm will almost surely be papillary in character and the chances of it being a Grade I tumor are about four in 10, in which case he has a 57 per cent chance of being alive five years hence. If it is more malignant, he has only a 16.9 per cent chance of living five years. The neoplasm will probably be found at the base of the bladder.

3. With the exception of papillary carcinomas Grade I, the present methods of treatment are disappointing, but from reports of other writers no more than at any other clinic of this kind.

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ANNUAL MEETING KANSAS MEDICAL SOCIETY

TOPEKA, KANSAS

MAY 14-17, 1951



## PRESIDENT'S PAGE

Dear Doctor:

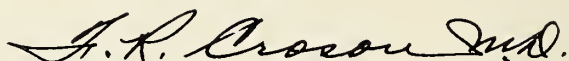
During the past six weeks I have had the pleasure of receiving messages from hundreds of you which can be classified into three categories; first, those which expressed appreciation; second, those which expressed confidence; and third, those which expressed cooperation and a genuine willingness to be of help if needed. These were all sincerely and profoundly appreciated and were a source of real joy to me, but also they were a challenge to me to do more and better work in the service of the Kansas Medical Society.

Your appreciation is accepted. I am having a lot of fun and a wonderful time being your presiding officer, and the compensation comes in constantly meeting with and working with the grandest fellows one could ever have the pleasure of knowing. Your confidence is cherished, but I hasten to assure you that our Society could not be what it is today if it were not for the genuine interest and help which you men have shown and also for these same attributes which our predecessors handed down to us. Your cooperation and willingness to help make me feel very humble, for I do lean heavily upon all of you and, guided by your opinions and advice, I assure you that all of your officers will be willing to double their efforts for Kansas medicine.

Our committees are functioning exceptionally well. I have had the opportunity to see a number of them at work and it is a source of extreme satisfaction to observe their serious deliberations. My thanks and appreciation for time and effort go to all the chairmen and committee members.

I sincerely hope that I have expressed to you the joy and satisfaction, the humility and the challenge which you have heaped upon me with your messages. Thank you and thank you again.

Sincerely, your president,

A handwritten signature in cursive script, reading "J. R. Croson M.D.".



## EDITORIAL COMMENT

### Where? Oh Where?

It is an interesting merry-go-round to attempt to figure out just how the administration is going to raise some of the funds to propel some of the paternalistic schemes that are proposed in a very sublime but polished and powdered way in the report and platform of the Midcentury White House Conference on Children and Youth.

Now let's see. We will place a parity on eggs, wheat and butter so that the farmer can have "a secure home that is free of want" and so he can not only pay a higher price for his own wheat when ground into flour but so he can pay more income tax and sales tax and hidden taxes, so that the government through "aid to education" can educate more people who buy a part of the wheat and the butter and the eggs, paying parity prices and local taxes so that they, along with the farmer, can finance the government so they can elevate the income of the low income groups "through supplementing the earnings of the head of the family out of public funds" so they can keep up with the Jones and buy more eggs and flour and butter at government established parities, to help elevate the sociologic standards and income of the farmer so that he can pay more taxes to—

You figure it out. We are getting dizzy. Perhaps some of our governmental paternalistic planners have gone around the vicious circle of more and better taxes to do more and greater things, each time with an operational take, and have become so dizzy that they can't think straight either.

### Perhaps—But We Can't Believe It

On January 15 President Truman proposed to Congress that they pass on to the taxpayers a \$16,000,000,000 boost in taxes.

We believe that we can all envision the necessity of national defense. We fought for our freedom in the first place and we have fought to preserve it. We engaged in and recovered from a civil war in order to preserve our individual rights as citizens of a democracy.

But does Mr. Truman stop at increasing expenditures for defense? No. He harps back on the "Brannan Plan" and a "National Health Insurance System." Certainly these two "New Deal" or "Fair Deal" nightmares would make the founders of the Democratic Party turn over and bury their faces in shame, should they ever be passed with the approval of even the present "Democratic Party."

Now Mr. Truman seems to worry a lot about catastrophic expenditures in the family budget when it comes to paying a fee for services rendered by a

non-profit hospital and by a physician. But what about the catastrophic income tax bill and all of those bits of hidden revenue on innumerable items such as telephone service, cosmetics, railway fare and many others that we have probably never heard of. Does that cause him concern? Does that give him a headache? Does that give him sleepless nights?

Instead of importing many thousand employees into Washington to help out in our defense program, why can't we transfer a few thousand from Mr. Ewing's department and a few thousand from one or another of the many governmental agencies whose activities now are certainly less important than the defense of our nation.

Since 1940 we have done much talking about critical materials and priorities. Certainly now we would all agree that our Number 1 priority is defense and our most critical material is money. If, by government order, we can in our individual economies strike out all usage of critical materials in non-essential production so that they may be used for Priority 1 or 2, then by the same yardstick certainly the government can do likewise.

Perhaps we can year by year increase our expenditures over our basic income and still continue to remain solvent—but we can't believe it.

Perhaps our individual taxpayers will continue to work harder and longer hours each day in order to pay more taxes to create more, and bigger, irresponsible agencies—but we can't believe it.

Perhaps we can tax ourselves into governmental servitude and still maintain our four freedoms—but we can't believe it.

### V.A. Changes Medical Director

Dr. Paul B. Magnuson was relieved of his duties as medical director of the Veterans Administration on January 15, 1951, after more than two years of service in that capacity. Dr. Magnuson said, "I'm fired as of today." V.A. Administrator Carl R. Gray, Jr., announced he was accepting a previously presented resignation.

Dr. Magnuson has been a supporter of the policy that V.A. hospitals should be directly under the medical department and that the V.A. should not open other hospitals until they could be adequately staffed. Dr. Magnuson is to be admired for his persistent stand to maintain the highest possible medical standards in the hospitals under his direction and not to stoop to the dilution of medical talent to a point of ineffectiveness, in order to put on a great "administration" show. The apparent policy of the Veterans Administration reminds one of a fa-

mous speech about 1942 in which an oft repeated statement was, "We have on hand or on order."

Of what value to a veteran is a hospital bed, if there is no trained personnel to care for him?

It is to be hoped that Admiral Joel T. Boone, a man exceedingly well versed in governmental medicine, will carry on in the high planes of professional standards that he has been known to advocate in the past, and along the conservative, yet progressive, policies that Dr. Magnuson instituted.

### Medical History of Sedgwick County

Although it is always difficult to attach the proper historical significance to contemporary events, it is often impossible to secure accurate information if too much time is allowed to elapse between the date on which an event happens and the date on which it is recorded. It is fortunate, therefore, that a history of the Sedgwick County Medical Society has been compiled at this time. Many persons are still living who can tell of events in the pioneer days of Sedgwick County, and the passage of some 60 years since the first medical meeting was held in Wichita permits evaluation not possible before. Dr. Howard C. Clark, Wichita, performed a great service for his society in preparing this history and assembling many old photographs and prints as illustrations.

The introductory chapter describes the Indian village on the site that is now Wichita and tells of the influx of pioneers to that location on the banks of the Arkansas River. The first physician to locate there was Dr. William Umstillor, who arrived in 1867 as post surgeon for Company H, Fifth U. S. Infantry. Second was Dr. E. B. Allen, who began practice in 1869 and became a leading citizen of the new community, serving Wichita as its first mayor and later becoming a member of the Kansas legislature and lieutenant governor of the state. Third was Dr. Andrew H. Fabrique.

Dr. Fabrique, known as "Fab," opened his office in Wichita in September, 1869, and figured prominently in all medical activities there until his death in 1928. Dr. Clark devotes a chapter of his book to Dr. Fabrique, his influence on medical events and the Wichita physicians, "Fab's boys," who learned much of medicine and the problems of human relationship through association with him. Many of Fab's boys, proud of that name, are practicing in Wichita today. As evidence of Fab's distinction, it is recorded that he was made president emeritus of the Sedgwick County Medical Society in 1924.

Not too much emphasis was placed upon the educational qualifications of physicians in the early days, and the history records many instances of those who began practice without much medical background. "Some had actually studied hard at

medicine," Dr. Clark reports, "and others had merely glanced at a medical book as they drifted in the westward tide. Some saw the vast plains as an opportunity to sell the scattered pioneers any sort of a bill of goods—even doctoring, if possible . . . Some had degrees, and others had beards and personality. Many dated from the Civil War, with doubtful scientific knowledge but excellent bedside manners."

In 1885 the state legislature decided to enforce the Medical Practice Act of 1870, which required that each physician register with the county clerk, giving his name, school of practice, name of medical college and place of graduation. Another portion of the law provided that "in all cases where any person has been continuously engaged in practice of medicine for a period of ten years or more, he shall be considered to have complied with the provisions of this act, and where persons have been in continuous practice of medicine for five years or more shall be allowed two years in which to comply with such provision." Some who registered classified themselves as homeopaths, others defined their schools as regular, eclectic and magnetic. Several midwives in the county also registered.

The range of pioneer illnesses included malaria, typhoid, dysentery, pneumonia, la grippe, bilious fever, tuberculosis, diphtheria, ague and scarlet fever, as well as childhood diseases such as whooping cough. Remedies were simple and well known, many patent medicines were employed, and whiskey was considered a standard tonic. The treatment of gunshot wounds, in those days, was accepted as a matter of course.

The history tells of several early medical societies, the first of which was the Wichita Pathological Society, organized in 1888 by Dr. Fabrique. In 1889 a second organization, the Wichita City Medical Society, came into being. Records are not available but it is assumed that the group functioned satisfactorily until 1902 when the Wichita Academy of Medicine was formed. It included most of the physicians in the city and had 29 charter members. The first meeting was held at the Wichita Club, and the first paper was given by Dr. J. D. Clark, who at that time was an interne at St. Francis Hospital.

The Academy of Medicine existed until 1903, when an organizer for the American Medical Association came to Kansas to reorganize the state society and county units. Several factions in Wichita, divided according to the hospitals in which they worked, resisted efforts to disband one group and form another but were finally influenced to do so by a young physician new in Wichita, Dr. J. F. Gsell. He convinced them that the responsibility of medicine and its obligation to the populace demanded unity among physicians, and the impression he made at that time caused the group to name



him as first president of the Sedgwick County Medical Society.

Twenty-five charter members were enrolled and paid dues of three dollars per year. One or two formal papers were presented at the weekly meetings, and after each session the members would adjourn to the back room for a smoker. At each meeting a motion was made to instruct the treasurer to pay for the keg of beer consumed at the previous gathering, and the motion always carried.

Dr. Clark's history is not confined to a recital of dates and events; it includes interesting and humorous anecdotes relating to the practice of medicine and quotations from publications of the time. He traces a definite course to present day standards in Sedgwick County where 233 physicians, having the best of modern scientific aids at their command, render medical care to the community.

Even casual reading of the publication discloses the wealth of interesting material that would be lost to posterity if it were not recorded, and brings to mind the fact that there exists no inclusive history of the Kansas Medical Society. The efforts of any of its members to compile a history of the state organization would be welcomed, and it is hoped that the work will be undertaken before the available material is lost in the passage of time.

### Plans for 92nd Annual Meeting

Plans for the 92nd annual meeting of the Kansas Medical Society, to be held at Topeka, May 14-17, 1951, are nearing completion. Arrangements have been made for a superior scientific program and the usual entertainment features.

The scientific program is virtually completed and will include, among other well known medical specialists, such men as Ethan A. Brown, M.D., Boston, Allergy; Tullos O. Coston, M.D., Oklahoma City, Ophthalmology; Stuart C. Cullen, M.D., Iowa City, Anesthesiology; William J. Engel, M.D., Cleveland, Urology; Robert Jackson, M.D., Iowa City, Pediatrics.

The scientific program will begin Tuesday morning, May 15, and continue through Thursday, May 17, at the Little Theatre in the Municipal Auditorium.

In the auditorium will be housed the exhibits. Many commercial exhibitors are expected to present the latest products of America's best known pharmaceutical and surgical supply houses. A large field of scientific exhibits is anticipated for this session. Individual members of the Kansas Medical Society are cordially invited to exhibit any original work and may place their exhibits in competition for awards to be given at the annual banquet.

The annual banquet will be an outstanding occa-

sion and promises to bring physicians of Kansas and their wives an unusual experience in entertainment. This will be held on Wednesday evening, May 16. Other entertainment will be the golf tournament and skeet shoot on Monday, May 14, and the Kansas Medical Athletic Association dinner that evening. On Tuesday evening and Thursday afternoon the House of Delegates will meet to conduct the business of the society.

Not completed but under study by the committee are plans for a public meeting to be held on Thursday afternoon. If current efforts to provide a program are successful, this session will have unusual interest for the profession and the laity alike. Complete details on this and all other events of the annual session will be carried in the April issue of the Journal. It is suggested, however, that reservations for hotel rooms be made at this time by writing directly to the hotels, of which the two largest are the Jayhawk and the Kansan.

The Shawnee County Medical Society is host to the Kansas Medical Society for this occasion. Dr. Don C. Wakeman, president of the host society, has appointed the following committee chairmen for the various details:

General Chairman—Harry J. Davis, M.D.  
 Scientific Program—David E. Gray, M.D.  
 EENT Scientific Program — Ralph R. Preston, M.D.  
 Commercial Exhibits—Paul M. Powell, M.D.  
 Scientific Exhibits—Louis Cohen, M.D.  
 Arrangements and Banquet—Francis T. Collins, M.D.  
 Publicity—Donald H. Macrae, M.D.  
 Entertainment—Frederick L. Ford, M.D.  
 Reception—Daniel L. Tappen, M.D.  
 Auxiliary—Robert E. Pfuetze, M.D.

### Aid to Medical Education

Representative M. G. Burnside has made changes in his original plan for a bill to aid medical education, according to a recent report from Washington, and will make the proposal more far-reaching than he originally intended. Suggestions from consultants and advisors have brought about the change.

The original idea of the representative was for a simple measure going no further than authorizing financial assistance to existing medical schools to permit purchase of new equipment and renovation of buildings, plus pump-priming funds to encourage establishment of a few new schools. He is now considering addition of dental and osteopathy schools, provisions for an advisory council, and extension of the program over a five-year period rather than a three-year period.

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## BLUE SHIELD

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### Do the Members Really Understand the Benefits?

In our meetings with Blue Shield Relations Committees and with county medical societies, physicians frequently make the statement that the Blue Shield member does not understand what is in his contract. These statements carry the implication that the Blue Shield staff may be over-zealous in selling the contract to the public and thereby may mislead people to believe they have more services than Blue Shield actually covers.

This implication is so contrary to the spirit and aims of the Blue Shield organization that it should be discussed fully in the interest of a better understanding of what Blue Shield is trying to do. To put the subject in the proper perspective it should be realized that Blue Shield covers a membership of over a quarter million persons; that during the past year over 69,000 members were added to the plan. In other words we are dealing with the understanding of a large number of people. Furthermore, during the year 1950 Blue Shield processed some 56,248 cases. During that time letters from members indicated a misunderstanding by less than two per cent of those who wrote in. Even here, in a large number of cases they were not saying they did not understand the services but very often they did not agree with the policy.

Almost every widespread test that Blue Shield has conducted on these questions indicates that the vast majority of members received what they expected. It seems fair to say that if there were a wholesale misinterpretation or misunderstanding, there would be many more complaints than those indicated by the trend in the letters. So our problem resolves itself to a certain small percentage of members who either refuse to understand or have not had a clear knowledge of the contract benefits. There can be some discounting of the members who go to their doctors and simply ask questions on whether certain services are covered such as office calls, home care, diagnostic x-ray, etc. Many of these members are merely asking the questions to confirm their own understanding. It's a case of not wanting to miss anything in the event they are wrong.

#### Where Members Get Their Information

Potential members can get information on Blue Shield from five different sources. Where an enrollment is being conducted the potential member can read descriptive information about the plan in the folder which Blue Shield makes available for that purpose. This folder is carefully worded and virtually reproduces the contract language on the main

essentials. There has been no complaint by physicians that the printed folders in any way misrepresent Blue Shield services.

A second method of members getting information is in meetings held by enrollment representatives. Here a most careful discussion is carried out by the representative with emphasis on the things that Blue Shield does and does not cover.

A third source of information is through the volunteer who helps to conduct community enrollment or through representatives of management where enrollment is being conducted in employee groups. Here the potential members are dependent upon the accuracy of information which is passed along by word of mouth. However, they also have access to the printed folder.

A fourth source of information is available to members when they join through the formal contract issued by Blue Shield. This contract has been written as simply as possible with those services not covered spelled out in bold type. The wording of the contract complies with the suggestions of the Department of Insurance. In fact every effort is made to be clear on all points.

The last source of "information" to which members or potential members are exposed in heresay. It would seem that this latter source might well be blamed for a considerable part of any misunderstanding that exists. When members talk over their operations they do not generally speak in technical terms which would comply with contractual provisions. They explain to their neighbors and friends what payment was made for certain services but might not clearly indicate the services they received. In this way other members gain impressions which in most cases are inaccurate. Later on when those particular members receive services, the exact contractual provisions do not fit with the information they have picked up through casual conversation and heresay.

The Blue Shield organization is sensitive to the need for careful presentation of the services to the public. Every effort is made to present the plan in its true light. There are enough good things about Blue Shield to make it unnecessary to exaggerate its ability to perform. However, it is most important that participating physicians do not give the impression that Blue Shield is careless in its presentation methods. A very valuable contribution by physicians and their medical assistants would be the carrying out of a constant educational job with members when they have occasion to deal with them on Blue Shield services. The attitude at the physician's office can do much to cement good member relations and keep our members satisfied and in the fold.



## ACTIVITIES OF MEMBERS

Dr. J. W. Neptune, who has practiced in Salina since 1899, is spending the winter in California.

\* \* \*

Dr. W. E. McKinley, who has been associated with the Osawatomie State Hospital for the past eight years, has opened an office for general practice in Gardner.

\* \* \*

Dr. H. P. Jones, Lawrence, announces that Dr. G. E. Manahan is now associated with him in the practice of surgery. Dr. Manahan recently completed a three-year residency in general surgery at Ancker Hospital, St. Paul, Minnesota.

\* \* \*

Dr. George Westfall, Jr., who has been on the staff of the Hertzler Clinic, Halstead, for the past 18 months, received orders to report for active duty in the Army at Brooks General Hospital, San Antonio, Texas, on January 6. He recently received a commission as a captain.

\* \* \*

Dr. Thomas R. Hood, director of the city-county health department at Topeka, is one of 12 members of a newly organized city-county civil defense council.

\* \* \*

Dr. Robert M. Knox, who has been practicing in Wamego for three years, went to Des Moines last month for a two-year residency in surgery at the Iowa Methodist Hospital.

\* \* \*

Dr. J. E. Seitz, Wakeeney, reported at Fort Sam Houston, Texas, on January 6 for active duty with the Army. He learned there that he will be assigned to duty in Japan.

\* \* \*

Dr. W. W. Weltmer, Beloit, was named health officer of Mitchell County recently.

\* \* \*

Dr. John Coyle, Coffeyville, discussed socialized medicine before the Longfellow P.T.A. unit at Coffeyville January 16.

\* \* \*

Dr. N. H. Overholser, El Dorado, was sworn in as coroner of Butler County on January 8.

\* \* \*

Dr. Herbert L. Bunker, Jr., Junction City, was recently commissioned a captain in the Army reserve corps and reported for duty at Fort Riley on February 5.

\* \* \*

Dr. C. H. Benage, Pittsburg, was speaker at dedication exercises for the new 50-bed Neosho Memorial Hospital at Chanute, January 15. The hospital

was financed by a county bond issue and \$100,000 in local contributions, without federal aid.

\* \* \*

Dr. A. L. Hilbig, who has been practicing in Liberal for 20 years, was the subject of a feature article in the Liberal Southwest Times on January 4. Dr. Hilbig is president of the Liberal Rotary Club this year.

\* \* \*

Dr. Lyle Wonderlich, Concordia, was guest of honor at a party held in Concordia recently before he reported for duty at an Army air corps camp in Biloxi, Mississippi. Dr. Wonderlich has been serving as anesthesiologist at St. Joseph Hospital in Concordia.

\* \* \*

Dr. H. L. Clark, Topeka, completed his 26th year as Shawnee County coroner on January 8. A feature story on his experiences in that office was printed in the Topeka Capital in December.

\* \* \*

Dr. T. C. Ensey, Marion, took office as Marion County coroner on January 8.

\* \* \*

Dr. Robert W. Myers, staff member of the Bethel Clinic, Newton, was recently commissioned a captain in the Army and received orders to report to Fort Sam Houston, Texas, on January 6 for a 30-day orientation school.

\* \* \*

Dr. Frank X. Lenski, Iola, has purchased St. John's Hospital there from the Sisters of St. Joseph who had been operating it, and announces that it will be open at least until the Allen County Hospital is prepared to receive patients.

\* \* \*

Dr. Charles Hopper, Emporia, who had received Army orders to report to Fort Sam Houston, Texas, on January 4, received approval of his request for a 30-day delay.

\* \* \*

Dr. J. E. Hill, Arkansas City, has been appointed eye, ear, nose and throat physician for the Santa Fe Railway. Dr. G. L. Campbell, also of Arkansas City, has been named an additional Santa Fe surgeon for the area.

\* \* \*

Dr. W. Stephenson, Norton, took the oath of office for county coroner in January, starting his 24th year as an elected county official.

\* \* \*

The Gelvin-Haughey Clinic, Concordia, was formally opened on January 16. On the staff are Dr. E. Raymond Gelvin, Dr. Leo E. Haughey, and Dr. Fred Emery, surgeons; Dr. J. E. Scheffenmacher, radiologist; Dr. C. D. Kosar, consulting eye, ear

nose and throat specialist, and Dr. John Porter, consulting cardiologist. Dr. M. D. McComas, Jr., urologist, will join the staff on May 1.

\* \* \*

Dr. T. P. Butcher, Emporia, was speaker at a meeting of the Men's Club of the First Congregational Church at Emporia at its January meeting. He told of recent advancements in medicine and surgery.

\* \* \*

Dr. George von Leonrod, Jr., Dighton, is beginning a new term as health officer of Lane County.

\* \* \*

Dr. Robert E. Bolinger, assistant professor of medicine at the University of Kansas School of Medicine, spent the month of January at the Institute for Nuclear Studies at Oak Ridge, Tennessee.

\* \* \*

Dr. C. D. Monroe, Ulysses, a Navy reserve officer, received orders to report for active duty on January 15 at the Great Lakes Naval Training Station.

\* \* \*

Dr. Karl Voldeng, Wellington, was one of the speakers at an all-day meeting for workers for the American Cancer Society at Wellington on January 15. He discussed new trends in cancer research.

\* \* \*

Dr. Richard R. Howard recently completed a fellowship in internal medicine at the Massachusetts General Hospital and has rejoined the Snyder-Jones Clinic staff in Winfield.

\* \* \*

Dr. G. I. Thacher, Waterville, was recently named health officer for Marshall County.

\* \* \*

Dr. David Robinson, chairman of the section on plastic surgery at the University of Kansas School of Medicine, spoke on "The Coverage Problem in Compound Fractures of the Lower Leg" before a meeting of the Western Surgical Association in Minneapolis in December.

\* \* \*

Dr. S. D. E. Woods, superintendent at the Osawatimie State Hospital for the past 23 years, resigned that position recently because of poor health. Dr. Wirt A. Warren has been appointed acting clinical director.

\* \* \*

Dr. Jack W. Revere has joined the staff of the Ashley Clinic at Chanute and will specialize in surgery. He recently completed a residency in surgery at the University of Kansas Medical Center.

\* \* \*

Dr. W. H. Algie, Kansas City, was speaker at a recent meeting of the Wyandotte County Medical Assistants Society. He discussed emergency medical care.

Dr. V. J. Elson, Paola, was named coroner for Miami County last month.

\* \* \*

Dr. Arthur Bacon, Dr. Earl L. Mills and Dr. David Wall, all of Wichita, were speakers at a staff conference of psychiatric social workers held at Wichita last month.

\* \* \*

Dr. M. O. Steffen, Great Bend, was guest speaker at a meeting of the Hearthstone Home Demonstration Unit in Great Bend last month. He presented arguments against a system of socialized medicine.

\* \* \*

Dr. Charles S. Davis has discontinued practice in Galena and is entering the Army as a first lieutenant in the medical corps.

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## COUNTY SOCIETIES

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A dinner meeting of the Marion County Society was held at Marion, January 11. For the scientific program Dr. A. C. Eitzen, Hillsboro, gave a case report on a patient with a second ectopic pregnancy, Dr. W. M. Tate, Peabody, reported a case of temporal arteritis treated with ACTH, and Dr. R. R. Melton, Marion, discussed glaucoma and presented a case report. The following officers were elected for 1951: president, Dr. G. J. Goodsheller; vice president, Dr. R. R. Melton; secretary-treasurer, Dr. O. C. McCandless.

\* \* \*

The Central Kansas Medical Society was host to the Golden Belt Medical Society at an afternoon program and dinner session at the Ellsworth Country Club on January 4. Scientific papers were presented by members of the faculty of the University of Kansas School of Medicine. Dr. G. O'Neal Proud, chairman of the Department of Otolaryngology, discussed "The Tonsillectomy Problem," and Dr. A. Theodore Steegmann, professor of neurology, spoke on "Diagnosis and Treatment of Cerebrovascular Accidents."

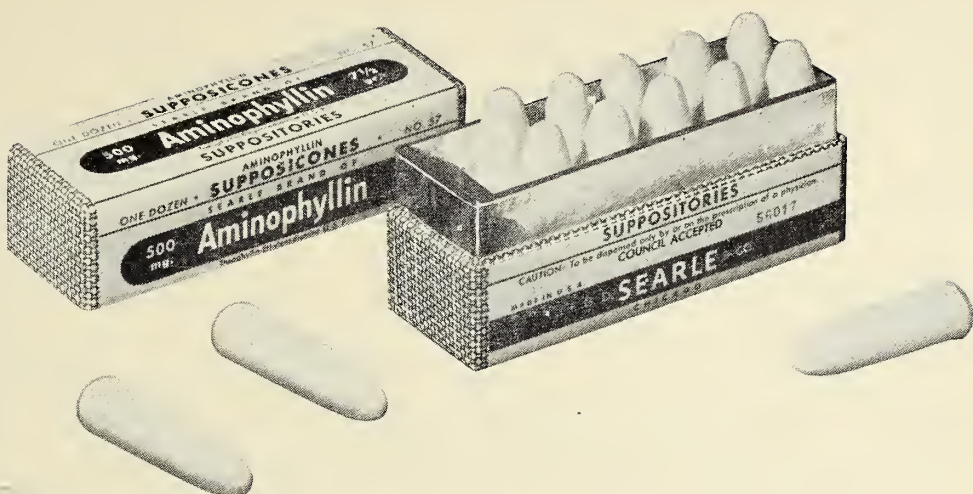
\* \* \*

"The Use of Antibiotics in Non-Tuberculous Pulmonary Diseases" was the topic of a paper presented at the January 9 meeting of the Sedgwick County Medical Society in Wichita. The speaker was Dr. John W. Middleton of the University of Texas School of Medicine.

\* \* \*

Dr. J. R. Prichard, Fort Scott, was re-elected president of the Bourbon County Society at a meeting held at Burke Street Hospital, Fort Scott, December 20. Dr. Leland Randles, Fort Scott, was named secretary. A dinner for members of the society and the hospital staff was served by the Sisters of Mercy.





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*Halpin, L. J.: An Appraisal of Therapeutic Procedures in Bronchial Asthma, J. Iowa M. Soc. 39:468 (Oct.) 1949.*

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RESEARCH IN THE SERVICE OF MEDICINE **SEARLE**

The Franklin County Society met December 27 at Ransom Memorial Hospital, Ottawa. The following officers for 1951 were elected: president, Dr. R. A. Gollier; vice president, Dr. R. S. Roberts; secretary-treasurer, Dr. L. N. Speer; delegate, Dr. F. A. Trump; alternate, Dr. J. S. Barr.

\* \* \*

New officers of the Wyandotte County Society were installed at a meeting held at the Hotel President, Kansas City, Missouri, January 13. Those serving are: president, Dr. M. J. Ryan; vice president, Dr. Glenn R. Peters; secretary, Dr. E. J. Grosdidier; treasurer, Dr. Emmerich Schulte.

\* \* \*

Dr. A. W. Butcher, Wakefield, is now serving as president of the Clay County Society. Dr. G. W. Bale, Clay Center, is vice president and Dr. Forrest D. Taylor, Clay Center, is secretary-treasurer.

\* \* \*

A meeting of the Wilson County Society was held January 10 at the Blue Tea Room in Neodesha, with members of the Auxiliary as guests for dinner. A business session was held later at the home of Dr. J. W. McGuire.

\* \* \*

Three Iola physicians were named officers of the Allen County Society at a meeting held January 9. Dr. Eugene Meyers was elected president, Dr. A. R. Chambers, vice president, and Dr. Gerald B. Pees, secretary-treasurer.

\* \* \*

The Riley County Society met January 17 at the Gillett Hotel in Manhattan. Dr. Paul W. Schafer, chairman of the department of surgery at the University of Kansas Medical Center, spoke on "Middle Lobe Syndrome," a report of a group of cases of middle lobe pulmonary disease under study at the university hospital.

\* \* \*

A meeting of the Smith County Society was held at the home of Dr. Victor E. Watts, Smith Center, on January 16. Dr. Buford Hartman was elected president of the group for 1951 and Dr. Watts was named secretary. Dr. Hartman and Dr. Lafe Bauer will serve as delegates to the state organization.

### Cancer Conference in Wichita

Almost 200 physicians from Kansas and a number from Missouri, Oklahoma, Texas and Colorado were present at the third annual Mid-West Cancer Conference held at the Broadview Hotel, Wichita, January 18, 19 and 20. The conference was sponsored by the Kansas Division of the American Cancer Society with the cooperation of the Kansas Medical Society.

The scientific program began on Thursday afternoon and continued through Friday and Saturday

morning. Nine guest speakers took part in the formal program and were discussants at two round table luncheons. A pathology seminar, sponsored by the Wichita Association of Pathologists, was held Saturday afternoon. Dr. Howard T. Karsner of Washington, D. C., one of the speakers at the conference, was moderator for the seminar, discussing "Tumors of the Endocrine Glands."

Dr. John H. Lawrence, Berkeley, California, director and professor of the Donner Laboratory of Medical Physics at the University of California, was speaker at the banquet session, to which the wives of physicians were invited. He spoke on "Constructive and Destructive Aspects of Atomic Energy." Music was provided by the Wichita Kiwanis Club Quartet.

All of the scientific addresses were recorded and will be published as a supplement to the Journal some time next summer so that physicians who were unable to attend the conference will have the benefit of learning new techniques in the diagnosis and treatment of cancer.

Dr. J. P. Berger, Wichita, is chairman of the Committee on Control of Cancer and Dr. Orville R. Clark, Topeka, is president of the Kansas Division of the American Cancer Society.

### Substitute for Morphine

Perfection of a new synthetic narcotic to replace morphine was announced last month by Dr. Henry K. Beecher, civilian consultant to the Army Surgeon General and professor of research in anesthesia at the Medical School of Harvard University. The new drug, methadone, was tested in Korea on hundreds of American and allied wounded.

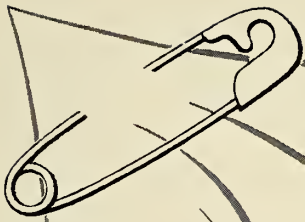
The story of methadone goes back to 1945 when the Army took over the I. G. Farben plant in Germany, where preliminary work had been done. Since that time a number of groups have worked on the synthetic which has the same effect as morphine, milligram for milligram, and which is made from nitriles derived from nitrogen and hydrocarbons. Its pain killing power is as great as that of morphine and it produces less nausea and vomiting.

### DEATH NOTICES

John Ross Newman, M.D.

Dr. J. R. Newman, 70, an active member of the Bourbon County Medical Society, died at Fort Scott January 23. He had been in poor health for a year and had suffered a heart attack several days before his death. He was graduated from the Central Medical College, St. Joseph, Missouri, in 1905, and had practiced in Fort Scott since 1909.





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## Case Reports from the University of Kansas Medical Center\*

### Tumor Conference

#### Hemangioblastomas of the Cerebellum in Two Brothers

Edited by R. E. Stowell, M.D. and D. M. Gibson, M.D.

Two cases of hemangioblastoma of the cerebellum in brothers will be considered with respect to their relation to Lindau's and von Hippel's disease and the hematological complications.

#### Tumor Conference Case No. 51-1

G. R., a 15-year-old boy, was admitted to the University of Kansas Medical Center on November 14, 1950, and dismissed on December 10, 1950. He presented a history of progressive blurring of vision over a period of two months and experienced mild headaches during the week previous to admission, but had been accustomed to intermittent headaches for a protracted period.

The pertinent physical finding consisted of 10 diopters of papilledema. There were no localizing neurological signs or retinal hemangiomas. The blood contained 6.65 million red blood cells; hemoglobin 111 per cent; and total blood volume 3,600 cc. or 75 cc. per kilo, compared with an assumed normal of 78 cc. The total plasma volume was 1,400 cc. or 30 cc. per kilo, compared with an assumed normal of 43 cc. The total red cell mass was 2,160 cc. or 45 cc. per kilo, compared with an assumed normal of 35 cc. The hematocrit reading was 60 cc. On November 16 a suboccipital craniectomy was performed. A very vascular hemangioblastoma in the left cerebellar hemisphere was partially removed. Postoperatively the patient received appropriate radiation therapy.

#### Tumor Conference Case No. 51-2

L. R., the 22-year-old brother of the first patient, was admitted to the University of Kansas Medical Center on November 30, 1950, and dismissed on December 24, 1950. The patient was admitted with a history of occipital headaches and progressive blurring of vision, the onset of which corresponded with that experienced by his brother. During the two weeks preceding admission, the patient had experienced unsteadiness in his gait and tended to brush against people on the sidewalk.

The pertinent physical findings consisted of marked papilledema and absence of retinal hemangiomas. The patient was repeatedly examined neurologically and no focal signs were found until the night before surgery. At this time he presented nystagmus on right lateral gaze, tended to stagger to the right, and displayed slight cerebellar ataxia in the right arm on the finger to nose test. The red

blood cell count was 5.56 million; hemoglobin 94 per cent; and total blood volume 4,409 cc. or 60 cc. per kilo. The total plasma volume was 1,984 cc. or 27 cc. per kilo and the total red cell mass 2,425 cc. or 33 cc. per kilo. The hematocrit was 55 cc. On December 2, 1950, a suboccipital craniectomy was performed. A very vascular hemangioblastoma in the right cerebellar hemisphere was removed. A total removal was accomplished in this instance and no postoperative irradiation therapy was instituted.

#### Discussion of Cases

Dr. Tice: The roentgenograms and ventriculograms in these two young men are similar. Two of the main features of increased intracranial pressure are illustrated by the spreading of the sutures in one boy and convolitional atrophy in the other. In both, the lateral and third ventricles are dilated and the third ventricle is cut off sharply and displaced forward, giving the picture of a posterior fossa, mid-line type of obstruction.

Dr. Helwig: Lindau's disease was first observed in 1926<sup>1,2</sup> when Lindau, a Swedish pathologist, was examining some cerebellar cysts, which were thought at that time to be cystic gliomas. He found that a number of these cases were associated with angiomas of the retina, a condition known as von Hippel's disease.<sup>3</sup> He noted in the histories of many of these cases of von Hippel's disease that they had suffered from increased intracranial tension; and, adding two and two together, he found on studying the sections that the cerebellar lesions were also angiomatous growths. Therefore, the combination cerebellar and retinal angiomata has been known since that time as Lindau's syndrome, or Lindau's disease. Only about one-fifth of the cerebellar lesions were actually found to be associated with von Hippel's angiomatosis retinae. I have seen only one case of von Hippel's disease, in which the eye was removed, and that was a classical capillary hemangioma. It is my understanding that most of the reported cases have been true capillary angiomas.

Among the interesting features of these two cases is the apparent familial aspect of the condition occurring in two brothers having symptoms almost simultaneously. Moeller<sup>4</sup> called attention to the familial association in tracing two families for three generations, in which these lesions, both angiomatosis retinae and cerebellar hemangioblastomas occurred. It appears to be a non-sex-linked dominant Mendelian trait, which apparently arises from some

\*Cancer teaching activities aided by a grant from the National Cancer Institute.





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disturbance in the mesenchymal tissues about the third fetal month.

Both of these tumors were red, hemorrhagic tumors, giving the classical gross appearance of many small blood-filled spaces. Usually these tumors occur as nubbins or masses within a cyst, frequently on the posterior aspect of the cyst, attached to one of the cerebellar hemispheres. Grossly they are often markedly vascular with an increased number of large vessels penetrating into them, and they even appear grossly to penetrate into the surrounding cerebellum, but they do not actually do so. They are usually delimited by a zone of compressed microglial substance. They tend to undergo extensive hemorrhage and degeneration, and the contents of the cyst may be lemon-yellow, orange-yellow, or occasionally they will seem to have a greenish-red color from recent hemorrhage. They are capillary hemangiomas, which are often associated with pseudo-xanthoma cells which occasionally appear to undergo proliferative activity. Neither one of these tumors shows a great amount of pseudo-xanthomatous elements. They are largely a tangled mass of endothelial-lined tubes, showing cystic changes and degeneration and areas of protein coagulum in the various sized cysts (Figure 1).

The tumors are perfectly benign as far as penetration and extension are concerned, and if they are adequately removed a good prognosis can be expected. One thing to remember is that if you do not remove this little nubbin, you are going to get a prompt recurrence of the cyst. Now that little nubbin may be hard to see. It may be evidenced by a little pink or brown or orange colored dimple actually in the wall of the cyst, so it could be possible

to remove the cyst and leave the nubbin, and then you've simply got the same story over again.

Dr. Williamson: The younger boy showed up only because of failing vision, and went to the Ophthalmology Department; there they found severely choked discs. The neurological examination was completely negative. The suture separation in his skull is a striking finding at the age of 15; it is rare even to see complete separation after the age of 12. Ventriculograms showed the picture of a posterior fossa tumor; he had no lateralizing signs on either side, so we assumed it was a mid-line lesion.

On opening the dura, the cerebellar tonsils were herniated down to the second cervical lamina, indicating that he would have died, had we done a spinal puncture. This is an important point to emphasize. There was no tumor evident on the surface of his brain. We then introduced a needle into each hemisphere, and in the left cerebellar hemisphere at a depth of about four cm. we found a resistant mass. We put the needle in the lesion and aspirated, and got such a frightening amount of blood that we thought it might be an aneurysm. There was nothing to do but cut down on the lesion, and we saw that it was a neoplasm deep in the cerebellum. We attacked the tumor with forceps and sucker, but the extreme bleeding forced us to terminate the operation after about 30 minutes without complete removal of the tumor. We did get adequate tumor removal for decompression, enough to relieve the block of the aqueduct, so that postoperatively his papilledema immediately receded, his headaches disappeared, and he left the hospital in a satisfactory condition. Since he had gotten only a partial removal, we gave him x-ray therapy. We know statistically that after such a partial removal, with x-ray therapy, we can expect roughly three years, five years, or maybe eight years, before he will get a recurrence.

The other boy showed up in his doctor's office with the frank statement, "Say, Doc, I've got the same thing my brother has." We knew it was a hemangioblastoma; we knew that we were defeated by bleeding on the first case, so I talked it over thoroughly with the second boy and explained the risk of total removal to him. We decided that we would make every effort to get a total removal, because when the tumor is totally removed the patient is cured for life. We decided that the additional risk was worth it, so we operated upon this boy sitting upright, which reduces venous bleeding considerably from that experienced in the prone position. Before surgery we withdrew 900 cc. of his blood to lower his blood pressure. Beneath the dura we again found an advanced tonsillar herniation, and immediately saw the tumor on the surface of the brain in the right cerebellar hemisphere. I

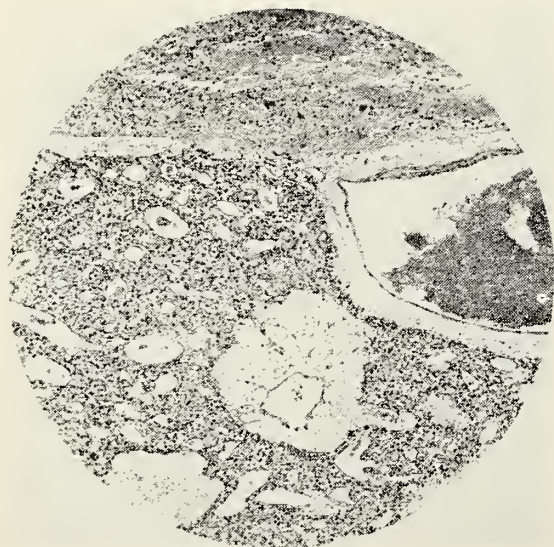
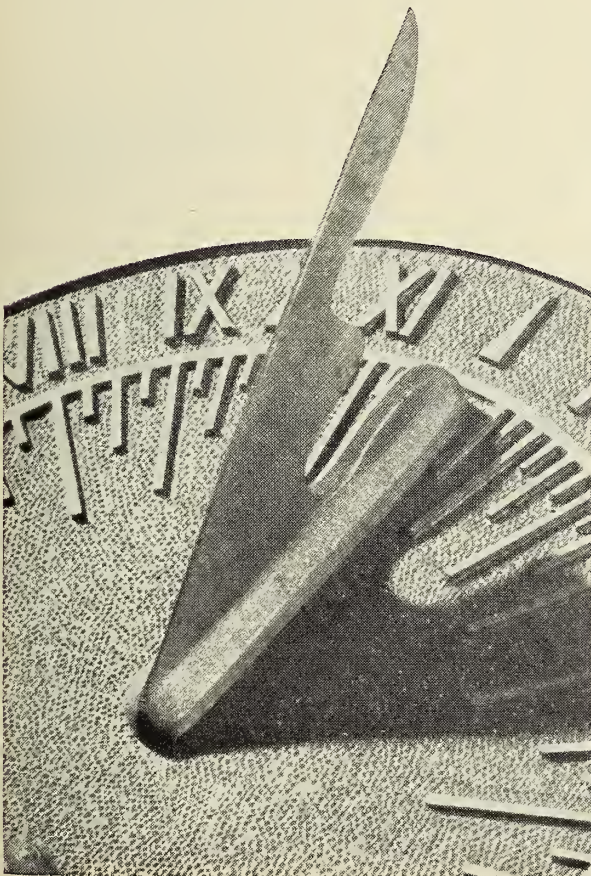


Figure 1. The tumor is composed of numerous blood spaces of varying size, surrounded by proliferating endothelial cells. Adjacent brain tissue is seen at the upper margin. X85.



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need not elaborate on the degree of bleeding which accompanied removal of the tumor. He was given 10 pints of blood during surgery. One contributing vessel was at least the size of my little finger. Total removal of the tumor was accomplished, though the degree of hemorrhage was almost disastrous. We finally had to pack the wound with oxycel and close, and fortunately he survived surprisingly well.

Cerebellar tumors are not uncommon, and such tumors in an adult are most likely hemangioblastomas or acoustic neurinomas. Three-fourths of these hemangioblastomas are cystic and have the little mural nodule that Dr. Helwig described. They can usually be totally removed and cured. Results with the solid tumors tend to be disastrous. Most surgeons agree that they are unable to remove the solid tumors satisfactorily, so they give x-ray in preference to losing the patients from hemorrhage. It is unfortunate that both of these boys had the solid type of hemangioblastoma and that both were tremendously vascular.

Another point that has come up recently is the relation of these tumors to polycythemia vera. At the last meeting of the Harvey Cushing Society there was a report of 40 cases of cerebellar hemangioblastoma from the Johns Hopkins Hospital,<sup>5</sup> which is not yet published. Of these 40 cases, 40 per cent had hemoglobin values ranging from 15 to 18 gm., and red cell counts over six million. In some of the cases a diagnosis of polycythemia vera had already been made before they presented symptoms of cerebellar tumors. Three-fourths of these lesions were cystic. All were benign microscopically. They may or may not be a part of Lindau's disease. It was agreed that the surgeon was obligated to get a total removal with the cystic lesions and do the best he could with the solid ones. They concluded that there was no erythropoiesis in the tumor. They also showed that total removal of the tumor did not alter the course of their polycythemia. They did not understand the relationship of polycythemia to cerebellar hemangioblastoma, but it was certainly very striking in 40 per cent of the patients. Another paper reported six cases of spinal hemangioblastomas in the same family.<sup>6</sup> There are several articles reporting cases of three cerebellar tumors in the same family, all hemangioblastomas.<sup>7</sup> In Lindau's disease, at autopsy, one finds many times cysts in the pancreas and kidneys, hypernephromas, angiomas of the spinal cord and liver, and an occasional tumor of the epididymis.

Dr. Stowell: Dr. Lemoine, would you comment on the ophthalmological aspects of von Hippel's and Lindau's disease?

Dr. Lemoine: On examination, these two boys presented a picture of increased intracranial pressure. I was interested in Dr. Williamson's statement

about the large vein in the brain lesion, because one can find angiomatous lesions in the retina simply by looking for the enlarged vein. In the disc there is an extremely large retinal vein. It will be three to five times normal size; all one has to do is to follow that vein out to its end and there will be a little whirlpool arrangement of many small capillaries that constitutes the angioma. This angioma is a transient process, followed by gliosis of the retina and edema, and eventually the retina usually separates and exudative retinitis develops. These angiomas tend to be bilateral. In fact, the majority of cases that start out in one eye usually later involve the other eye, and blindness in patients that have angiomatosis of retinae is the rule rather than the exception. The retinal and brain lesions may not occur concomitantly. I remember one 13-year-old patient on whom a retinal lesion was discovered during a routine examination; it was about 12 years later before he developed a cerebellar tumor.

The term von Hippel's disease is used for angiomatosis retinae. These boys did not present that picture, but only the picture of papilledema from increased intracranial pressure. They had no retinal lesions. Actually, the papilledema in the younger boy was so great that it extended from the disc up to and including the macular area so that part of the macular star could be seen on the edge of the elevated retina, and the other part was flat. It is amazing that postoperatively the papilledema decreased so much that he can now read.

These cases are usually picked up accidentally, or else they come in with cerebellar signs and one sees them in consultation. These people rarely have visual complaints because the angiomas start in the extreme periphery of the disc.

Dr. Stowell: Do you think either of these boys may develop retinal lesions in the future?

Dr. Lemoine: They could, but usually the eye lesions tend to occur earlier than the brain lesions. There are five other children in this family and it is extremely important to examine them all. We treat these lesions by deep x-ray therapy, and they disappear except for that dilated vessel.

Dr. Stowell: Dr. Wilson, would you comment on the hematologic problems these patients presented?

Dr. Wilson: We know that polycythemia can be associated with some brain tumors. For example, patients with Cushing's syndrome are prone to have polycythemia.<sup>8</sup> The normal total blood volume of adult man is 78 cc. per kilogram, with 43 cc. of plasma and a red cell mass of 35 cc. In polycythemia vera the total blood volume will be increased due to elevated red cell mass, the plasma volume remaining unchanged. These two boys have a little different picture. The younger boy has a total blood volume of 75 cc. per kilo, 30 cc. of which is plasma, and 45





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1. LEHR, O. (1950), RELATIVE MERITS OF COMMONLY USED SULFONAMIDE DRUGS AS COMPONENTS OF MIXTURES, N. Y. STATE J. MED., 50:1361, JUNE.



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cc. is red cells. This boy had an increase in red cells in the peripheral blood, suggesting a real polycythemia; but actually there is a decrease in blood plasma, so he has a false polycythemia. The older boy was a little different; he had a decreased total blood volume of 60 cc. per kilo, with 27 cc. of plasma and a red cell mass of 33 cc. So he has an actual decrease in the total blood volume and the amount of circulating plasma, but the red cell mass is normal. He actually has a pseudo-polycythemia, in that there is a hemo-concentration, with an elevated red cell count. This is an unusual hematologic finding. We plan to repeat the blood studies at a later date.

Dr. Williamson: We expect to follow these two boys, as well as other members of their family.

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## SERVICE NOTES

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All members of the Kansas Volunteer Advisory Committee, Lucien R. Pyle, M.D., Floyd C. Beelman, M.D., and Arthur J. Buff, D.D.S., were in Washington, D. C., January 12 and 13, to meet with the heads of the different branches of the armed forces and with representatives of Selective Service. The purpose of the meeting was to clarify the physicians' draft and to coordinate the efforts of the various advisory committees.

The latest registration of physicians was on January 15, when those in Priorities III and IV visited their local Selective Service boards. Physicians in Priorities I and II were registered in October. Under the law every licensed physician in the United States who is a citizen should now be registered except those who had reached their 50th birthdays on January 15 and those who hold commissions, either in the active or reserve branches of the armed forces. If for any reason a physician not exempt under the above provisions has not yet registered with his local Selective Service board, he should do so immediately.

Upon his return from Washington, Dr. Pyle sent a letter to each member of the Kansas Medical

Society summarizing the knowledge gained at the meeting. A portion of that information is recorded below.

Priority I, on a national basis, will be exhausted before the call of men in Priority II, and so on through to Priority IV. Induction from each state will be on a proportionate ratio basis to available qualified men.

Between now and April 1, 1951, some reserve medical and dental officers may be called because of special qualifications. After that date those who do not belong to organized units cannot be called to active duty without the consent of the National Advisory Committee. Priority I registrants who have been commissioned and who have not been called to active duty by that date fall in this category.

Deferments will be granted to only a small percentage of those in Priorities I and II. Physicians in isolated communities may be deferred until replacements are available, and consideration will also be given to those essential for teaching purposes, mostly full-time instructors. Interns will not be deferred after the completion of an internship of 12 months.

Residents in their third year may be deferred for the completion of that year, but the deferment may be cut back if necessary. It is doubtful that residents will be deferred past the current year of their residencies, with possible exceptions in the critical categories of neurology, psychiatry, anesthesiology, physical medicine and rehabilitation, and public health. It is thought that resident programs in the next few years will be built around those men rejected for the armed forces for physical reasons, women and veterans.

It is recommended that physicians in Priorities I and II apply for reserve commissions. Anyone who applies after receiving induction orders will be required to serve as a private until his commission is received and his discharge as a private is processed, which may take several months. Such physicians will not receive the bonus of \$100 per month offered those who are commissioned before receipt of induction orders. It is also suggested that residents classified II-A by their local draft boards apply for commissions a few weeks prior to the expiration of their deferments.

In his letter Dr. Pyle stressed the fact that it is impossible to make predictions for the future. Definite information will not be available until passage of a new defense bill now being considered by Congress.

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Whatever we do to help the world, we have to start with health. There is not much that nations agree upon, but we can agree about health.—*Minnesota's Health*, October 1950.



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## ANNOUNCEMENTS

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The American Congress of Physical Medicine will hold its 29th annual scientific and clinical session, September 4-8, at the Shirley-Savoy Hotel, Denver, with instruction seminars on all except the last day. All sessions will be open to physicians. Information may be obtained from the Congress, 30 North Michigan Avenue, Chicago.

\* \* \*

The National Gastroenterological Association announces that again in 1951 it will award \$100 and a certificate of merit for the best unpublished contribution on gastroenterology or allied subjects. Competition is limited to members of the A.M.A. or of a similar organization in a foreign country. Entries, limited to 5,000 words, should be submitted in five copies to the Association, 1819 Broadway, New York.

\* \* \*

The International Academy of Proctology will present its first teaching seminar on proctologic subjects in New York City, April 7. Registration is limited to physicians who are members of the A.M.A. or state or county societies, and preference will be given those affiliated with the Academy. Information may be secured from Dr. William Lieberman, Chairman, Seminar Committee, International Academy of Proctology, 1819 Broadway, New York.

\* \* \*

At a special meeting of the American Board of Obstetrics and Gynecology, held in Pittsburgh, December 14, 1950, the following changes in regulations were adopted:

1. Physicians otherwise qualified, who were graduated before January 1, 1939, and whose required training was in obstetrics or gynecology alone, and who have confined their practice to the specialty for at least five years immediately prior to application may be accepted for examination as candidates for certification.

2. Applicants who have been certified by one of the other specialty boards will not be eligible for certification by this board until they have relinquished the certificate previously conferred.

3. Since the majority of cases in this specialty are non-operative, adequate training is required in basic sciences, infertility, endocrinology, oncology, irradiation therapy, psychosomatic medicine, electrotherapy, and other non-operative methods of diagnosis and treatment as well as training in major procedures.

\* \* \*

The Atomic Energy Commission will offer four fellowships in industrial medicine for the 1951-

1952 academic year. The stipend for the first year's training will be \$3,600, plus tuition and laboratory fees, and for the second year \$5,000. The fellowships are open to citizens of the United States who hold a degree from an approved medical school and who have had at least one year of internship. Applications should be submitted to A.E.C. Fellowships in Industrial Medicine, Atomic Energy Project, School of Medicine and Dentistry, University of Rochester, Rochester, New York.

\* \* \*

A new certifying board, the American Board of Clinical Chemistry, Inc., has been established by representatives of the American Chemical Society, Inc., American Institute of Chemists, Inc., and the American Society of Biological Chemists, Inc. It is the purpose of the board to encourage the study, improve the practice, elevate and establish standards and advance the science of that specialized branch of chemistry known as clinical chemistry.

Candidates must present evidence of satisfactory moral and ethical standing and must have a Ph.D., M.D., M.Sc. or equivalent degree. Accredited courses in analytical, organic, physical and biological chemistry are required, in addition to three years full time experience in an acceptable clinical laboratory or five years as assistant professor or above in biological chemistry or related fields. Candidates who have practiced clinical chemistry for 10 years in an acceptable laboratory may be certified without examination at the discretion of the board. Those who file applications prior to July 1, 1952, whose qualifications are satisfactory to the board, may also be certified without examination.

Information may be secured from Dr. Joseph W. E. Harrison, 1921 Walnut Street, Philadelphia.

\* \* \*

The 1951 annual assembly of the American Academy of General Practice will be held in San Francisco, March 19-22. The program is being built around a broad basic concept of the general practitioner's responsibilities as a family physician. The entire first afternoon will consist of a study of the family and the problems of family living, and another afternoon will be devoted to discussion of psychosomatic disorders as seen by a family physician. Twenty-six well known physicians will take part in the scientific program, among them Dr. William C. Menninger, Topeka.

Requests for hotel reservations are to be addressed to A.A.G.P. Housing Bureau, Room 200, 61 Grove Street, San Francisco.

\* \* \*

The fourth annual postgraduate course in diseases of the chest sponsored by the American College of Chest Physicians and the Laennec Society of Philadelphia will be presented at the Hotel Warwick,



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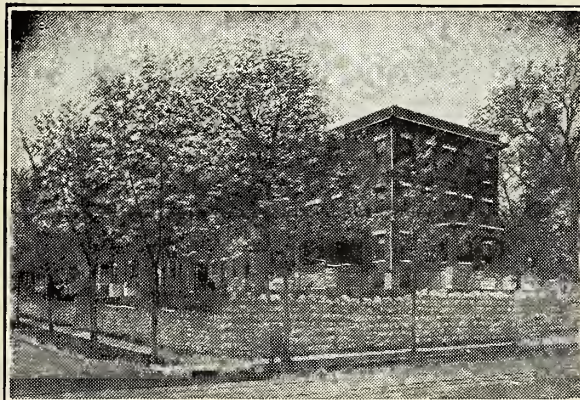
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Philadelphia, March 26-30. Applications will be accepted in the order in which they are received, and the tuition fee is \$50. Applications should be sent to the College, 500 North Dearborn Street, Chicago.

### Licenses to 37 Physicians

Licenses to practice medicine in Kansas were issued recently by the Kansas State Board of Medical Registration and Examination, eight by examination and 29 by reciprocity.

Those licensed by examination are: Dr. Michael J. Cox, Dodge City; Dr. Walter Maximalian Furst, Norton; Dr. Elroy Francis Goebel, Jr., Omaha; Dr. Bernard Halper, Wichita; Dr. Stephen John Kelly, St. Louis; Dr. Angelo Lapi, Kansas City, Missouri; Dr. John Albert Sheahon, Omaha; Dr. John Raymond Whitcher, Omaha.

Of the 29 licensed by reciprocity only five have plans to practice outside Kansas. Dr. K. Ruth Merrell Lapi and Dr. Joseph Albert Nigro listed their intended locations as Kansas City, Missouri, Dr. William Charles Mixson and Dr. Frederick Frick Young had made no decision on locations, and Dr. William Donald Ketter announced plans to practice in Falls City, Nebraska.

Those intending to practice in Kansas are: Dr. Robert Lamar Anderson, Wichita; Dr. Paul Glenn Brenneman, Hesston; Dr. William Cary Fleming, Topeka; Dr. John Keith Fulton, Wichita; Dr. Sigmund Gundle, Lawrence; Dr. Bert William Harned, Lenexa; Dr. Frank Henry Harris, Wichita; Dr. Stanley Gelbach Humphrey, Ottawa; Dr. Paul Marie Kersten, Topeka; Dr. George Hugh Lawrence, Winfield; Dr. Francis Xavier Lenski, Jr., Iola; Dr. Avarad Chipman Long, Norton; Dr. Walter Emil Luedtke, Emporia; Dr. David Lukens, Hutchinson; Dr. Richard Lawrence Merkel, Topeka; Dr. Peter Edward Penico, Wichita; Dr. Donald Robert Pierce, Topeka; Dr. Ann Pollak, Kansas City; Dr. Winston Calaway Riggins, Topeka; Dr. Alex Scott, Belleville; Dr. Christine Thelen, Anthony; Dr. Charles LeRoy Williams, Wichita; Dr. John Harrison Wolaver, Topeka; Dr. William Henry Wood, Topeka.

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## BOOK REVIEWS

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*Recent Advances in Nutrition with Particular Reference to Protein Metabolism.* By Paul R. Cannon. Published by University of Kansas Press, Lawrence, Kansas. 74 pages, 23 graphs.

In the three Porter Lectures given at the University of Kansas, Dr. Cannon summarizes the last decade's findings concerning protein metabolism with special reference to his experiments on the protein-depleted rat.

The following ideas illustrate the nature of the information presented:

A poor protein may be converted into a high quality one by the addition of essential amino acids lacking or deficient in amounts in the poor protein.

When flour containing lysine has been heated to a toasting temperature, the high temperature makes the lysine unavailable for intestinal digestion.

When protein-depleted rats are fed a diet adequate in all dietary essentials but with the dietary nitrogen derived from a mixture of crystalline amino acids, the removal singly of any one of the nine indispensable amino acids leads quickly to a slow-down or stoppage of plasma protein fabrication.

Protein utilization requires an adequate caloric intake. The lack of either calories or protein may constitute a limiting factor which hampers convalescence.

A deficiency of riboflavin may hinder the construction of certain tissue proteins.

A minimal daily requirement for each indispensable amino acid has been established. If any one of these amino acids is fed in an amount less than this daily requirement the animal loses appetite and weight. These indispensable amino acids are absolutely essential for maintenance of appetite and for rebuilding of depleted tissues, and they are essential every day in definite amounts and proportions.

Evidence shows that for effective tissue synthesis all of the essential amino acids must be available at approximately the same time. Experiments indicate that amino acids are necessary in certain proportions and that tissue synthesis is limited by the least amount available of any one amino acid.

Man's daily requirement of the eight essential amino acids for maintenance has been established by W. C. Rose and his associates. This contribution will serve as a basis for determinations of the altered requirements in abnormal states. For maintenance the daily protein needs range between 20 and 30 grams of good quality protein. For protein synthesis in a severely depleted patient, probably 125 grams of high quality protein are needed daily.

Protein concentrates are usually effective. Oral hydrolysates are actually indicated for only a few situations, namely allergy or where minimal amounts of residue are required. Skim milk powder is available at a fraction of a cent per gram of protein, whereas a hydrolysate costs 10 to 20 times that much.

One criticism of the book is that the title on the outside cover, "Recent Advances in Nutrition," is misleading. Over three-fourths of the book deals with protein metabolism. Other nutrients are mentioned only as they are concerned with proteins.—B.R.



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Karl J. Waggener, M.D.

Wendell T. Wingett, M.D.

*Diagnostic Standards and Classification of Tuberculosis, 1950 Edition. Published by National Tuberculosis Association.*

This enlarged publication is not intended as a text, but rather a statement of principles to serve as a general guide to practitioners, sanatoria, public health and industrial agencies.

A new clinical classification of tuberculosis is presented, placing greater emphasis on adequate bacteriological study. Also, the accepted classification of bronchopulmonary segments is presented. Separate sections on mass roentgenologic surveys and vocational rehabilitation appear for the first time. The section on technical procedures has been enlarged to give more detailed information.

This new addition will probably not meet universal approval of clinicians, but will certainly be accepted by public agencies as a guide in establishing policies of isolation, re-employment and various medico-legal questions. Its contents should be familiar to all practitioners.

This publication is available through your local tuberculosis society or the Kansas Tuberculosis and Health Association, 1134 Topeka Avenue, Topeka, Kansas.—L.E.W.

\* \* \*

*The Science of Health. Second Edition. By Florence L. Meredith. Published by the Blakiston Company, Philadelphia. 452 pages, 48 tables, 134 illustrations. Price \$3.75.*

This book is designed for college students in hygiene courses. It is presented largely from the individual standpoint, as the author gives facts which are usable by the individual student in making his own decisions regarding personal hygiene. Dr. Meredith has attempted to give opinions held by medical science and has used scientific terminology in so far as it will help to clarify the student's thinking. She has made an effort to weight the material properly, giving each subject an amount of space in proportion to its importance.

The material is arranged so that its order and sequence in itself will be educational in effect. Thus, in Part 1, which is an introduction, the national health situation is first presented followed by a description of the body itself. Part 2 covers the daily maintenance of individual health under the following headings:

1. Keeping the Circulation Good; 2. Taking In Supplies; 3. Doing Work; 4. Renewal of Energy; 5. Regulating Body Temperatures; 6. Keeping Clean; 7. Avoiding Injury By Germs; 8. Avoiding Injury By Physical Agents; 9. Avoiding Injury By Chemical Agents.

Part 3 presents major health problems in the United States, both of communicable diseases and noncommunicable diseases. The important subject

of mental health is covered in Part 4, and, finally, Part 5 is entitled "The Next Generation" and covers reproduction, heredity and parental care. There is an excellent bibliography which includes books chosen for their interest to the general public.

The book is well written and can be recommended as an aid to teachers to present hygiene briefly, yet in a manner befitting a scientific subject in a college curriculum.—E.V.T.

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## ABSTRACTS FROM CURRENT LITERATURE

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### Vitamin B<sub>12</sub> in Pernicious Anemia

*Vitamin B<sub>12</sub> Concentrate in the Maintenance of Pernicious Anemia. By G. C. Meacham, Paul J. Vignos, Robert W. Heinle, Austin S. Weisberger and Martin Epstein, Jnl. Lab. and Clin. Med., 35:5, 713-720, May 1950.*

Most studies on vitamin B<sub>12</sub> to date represent short-term observations on pernicious anemia patients in relapse, both hematologic and neurologic. It produces a hematopoietic response comparable in every way to that obtained with liver, and is effective in controlling neurologic and lingual complications of pernicious anemia. These studies indicate that 0.75 to 1.0 microgram of vitamin B<sub>12</sub> is about equivalent to one U.S.P. unit of liver extract. More recently it has been suggested that larger amounts of vitamin B<sub>12</sub> are necessary to produce maximum effect.

The series reported by these authors consists of 30 patients treated for five to 14 months, 20 of whom were treated for 12 or more months. Twenty-three of the 30 patients had been previously treated for one year or more with crude liver extract in dosage of 10 units every four weeks, and 21 of them maintained satisfactory hemoglobin and erythrocyte levels without neurologic complications. Fifteen of these patients had likewise been treated with folic acid for a year or more, with good control. The most effective dosage of folic acid was 10 mg. daily.

The series of patients treated with vitamin B<sub>12</sub> received the equivalent of one microgram daily, given as a single injection at intervals of three to four weeks. Of the 23 patients previously maintained on crude liver, 20 showed a decrease in the erythrocyte count on vitamin B<sub>12</sub>, and 14 of these showed a marked decrease. When therapy with vitamin B<sub>12</sub> was compared with previous folic acid therapy, 17 out of 18 patients had a decrease in erythrocytes. However, all patients on B<sub>12</sub> therapy maintained a sense of well-being, and none developed signs or symptoms of neurologic relapse. Several patients who were allergic to liver extract had no difficulty with vitamin B<sub>12</sub>.



## AMERICAN BOARD EXAMINATIONS

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*Surgery.* Written, various centers, March, 1951. Secretary, Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia, Pa.

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The authors speculate as to the cause for failure to maintain high erythrocyte levels with vitamin B<sub>12</sub>. Various theories are suggested, but they conclude that a dosage averaging one microgram per day is simply not sufficient for long-continued treatment.—E.J.R. \* \* \*

### Poliomyelitis in Infants

*Report of Ten Cases of Poliomyelitis in Infants Under Six Months of Age.* By Charles M. Mouton et al, *Jnl. Ped.*, 36:4, 482-492, April 1950.

Only 17 cases of poliomyelitis in infants under six months of age have been reported in the literature since 1897. In 1948 in the county of Los Angeles 2,973 cases of poliomyelitis were seen in the Communicable Disease Unit of the Los Angeles County Hospital and only 10 of these patients were under the age of six months.

The youngest was 14 days and the oldest five and one-half months. Only one had bulbar signs. The mortality rate for the group was 10 per cent. The one death was a five and one-half month old girl with a three-day history of fever, irritability, anorexia, weakness, and paralysis of the lower extremities. She died on her 26th hospital day, of bronchopneumonia.

In reviewing the presenting signs and symptoms in the 10 cases, two had upper respiratory infection, two manifest irritability, five had fever over 101, five were anorexic, and in eight of the infants weakness or paralysis had been noted prior to admission. Two of the 10 infants had weakness and paralysis as the only findings. None had meningeal signs, gastrointestinal symptoms or convulsions. The highest white blood count was 26,000 and the lowest 5,250, the average being 11,000. The neutrophile count varied between 36 per cent and 72 per cent. Spinal cell counts presented a low of eight lymphocytes and a high of 330, all lymphocytes. Two had 100 cells or more.

Treatment was supportive; all received hot packs and prophylactic penicillin.

Neurological examination of the 10 patients revealed that seven had absence of deep reflexes, one had right peripheral facial paralysis, one had absent gag reflex, and one was unable to swallow. Six had intercostal weakness and two diaphragmatic weakness, yet only one of these patients required the use of the respirator. When discharged from the hospital, residual involvement was as follows: five patients had paralysis of one extremity or more (right leg in two, right arm in one, left arm in two, both arms in one, both legs in two). One patient had generalized muscle tenderness as the only involvement, one patient had scoliosis. Eight of them had some paresis, either with or without paralysis.—D.R.D.

### Actinomycosis

*Actinomycosis of the Pharynx and Base of Tongue.* By William W. Wilkerson, Jr., and Lee F. Cayce.

The patient, aged 17, complained of a constant hacking cough, irritation and fullness of the throat in the region of the base of the tongue, which had been annoying her for two weeks. The symptoms were aggravated when the patient was reclining. Upon examination yellow excrescences were noted protruding from many crypts in the base of the tongue and inferiorly behind the epiglottis. Superiorly a few were found on the right lateral pharyngeal band. There was no inflammatory reaction.

The excrescences were rounded in shape, approximately two mm. in diameter and protruding from the crypts from one to three mm. The largest one lay anteriorly to the epiglottis.

These yellowish excrescences clung tenaciously to the crypts, yet no bleeding occurred upon removal. Cultures revealed actinomycosis (buccalis). The ear, nose and throat and general examinations, including serology, were negative other than some remnants of adenoid tissue.

The excrescences were composed of connective tissue in the center, surrounded by hyperkeratotic epithelium. Colonies of actinomycosis were found throughout these masses. The treatment consisted of the daily removal of the excrescences, the painting of the entire area with bismuth violet, roentgen radiation of lymphoid tissue in the area, autogenous vaccine, massive doses of potassium iodide, penicillin aerosol, and 4,200,000 units of penicillin given over a period of four months. With this therapeutic regime, definite improvement was apparent, yet the formation of the irritating masses continued. The infection, however, showed no tendency to spread.

At this point the patient was given 1.5 gm. of chloromycetin daily. Within a week a marked diminution of both the number and size of the yellowish masses was noted. At the end of three weeks the throat appeared healed. The patient was then given 0.75 gm. of chloromycetin a day for a month as a precautionary measure. The other therapy was continued throughout the entire period of treatment, but less frequently after chloromycetin therapy was instituted.

At the end of five months the patient was entirely well and her throat cultures were negative. Her general condition was never involved.—E.L.G.

### Student American Medical Association

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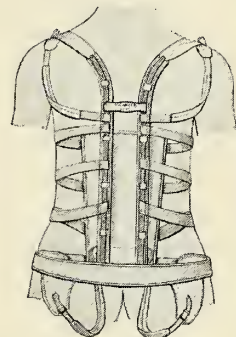
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A virtue and a muscle are alike. If neither of them is exercised they get weak and flabby.—Richard L. Rooney.

### General Practitioners Plan Meeting

The annual meeting of the Kansas Academy of General Practice will be held at Wichita, April 15. There will be a business meeting, scientific session and banquet during the day. Dr. George L. Thorpe, Wichita, is chairman of the committee arranging the program. Plans for the session were made at a meeting of the Board of Directors held at Kansas City on January 7.

Remember that life's length is not measured by its hours and days, but by that which we have done for our country and kind. A useless life is short if it lasts a century. We may do much in a few years, and we may do nothing in a lifetime.—*Albert Pike.*

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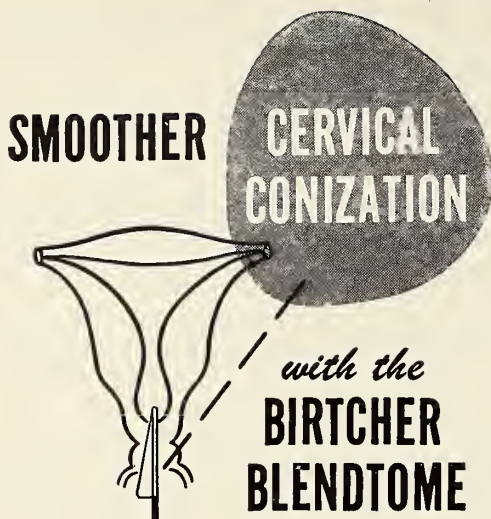
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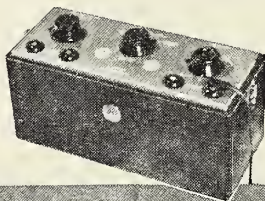
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## Trochanteric Fractures of the Femur\*

Experiences at the University of Kansas Medical Center with a Group of 45 Cases Treated by  
Non-operative Methods During the Past Five Years\*\*

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Trochanteric fractures of the femur are a common major injury, usually occurring in an aged individual as the result of a relatively minor trauma. The term is used here to include all fractures from the capsular attachment proximally to the immediate subtrochanteric area distally. It does not include isolated fractures of either the greater or the lesser trochanter, or subtrochanteric fractures without involvement of the lesser trochanter.

These fractures present at this time a problem of selection of proper treatment which was not present prior to the popularization of internal fixation, the availability of relatively inexpensive antibiotics, the general use of blood transfusions, and the shortage of hospital beds. It is commonly known that fractures in this area are extremely apt to unite, in contrast to intracapsular fractures, that they have a tendency to do so in a position of coxa vara and that they present a definite threat to the life of an elderly individual sustaining one. It is also commonly recognized that non-operative treatment, varying from simple recumbency with sand bags to prevent motion of the leg and to relieve pain, up through various forms of traction and even immobilization in a plaster spica, will often result in an extremity on which weight can be placed, if the patient survives the fracture.

During the last decade internal fixation of these fractures has become commonplace and published results indicate a considerable reduction in mortality coincident with this. It is not our purpose here to review the literature pertaining to this decreased mortality, it having been well summarized by Evans<sup>1</sup> and by Murray and Frew.<sup>2</sup> It is apparent from the

literature that internal fixation of these fractures is not free from complication and does not always result in a hip with good function, Bickel and Jackson<sup>3</sup> having reported a mortality of eight per cent in a series of 61 operatively treated fractures who were traced, and "poor result" percentage of five per cent in this same series. They report a "poor result" percentage of zero in 26 fractures treated by skin traction, but a mortality of 31 per cent in this group. Since it is difficult to avoid an element of selection in operative series, it is difficult to be certain whether all of this apparent decreased mortality is due to the surgical treatment.

At this hospital there is no routine definitive treatment for trochanteric fractures of the femur. On admission a patient with this type of fracture is placed in Russell's<sup>4</sup> traction immediately and given a thorough work up from the standpoint of history, physical examination, and indicated laboratory procedures. This latter includes urinalysis, complete blood count, and blood chemistries as indicated, including at least an NPN. Medical management is started immediately to correct, insofar as possible, obvious complicating conditions such as dehydration, anemia, cardiac decompensation, cystitis, etc., and as soon as the work-up is complete, decision is made as to whether the patient should be treated by operative or non-operative means.

This decision may require evaluation of a portable x-ray made after 24 hours or more in Russell's traction, and a bedside evaluation of the patient's physical and mental condition after having been in traction for a few days. Should it be decided that the fracture should be treated surgically, this treatment is scheduled at a time when the patient has been put in the best possible condition for operation. Consultations are obtained as indicated from other services, particularly the medical and urological, both as to evaluation of the risks and as to treatment, but

\*From the Orthopedic Section of the Surgical Service, University of Kansas Medical Center.

\*\*A report of experiences with a similar group of fractures treated operatively is in process of preparation.

the details of treatment are usually carried out by the orthopedic section. Surgical treatment, if selected, is usually an open reduction with fixation with a Smith Peterson nail with a plate. Non-operative treatment consists usually of continuation of treatment in Russell's traction, although occasionally treatment with a spica cast or a Percy Jones type of well leg traction has been used.

There has been a tendency here to operate on an increasing number of these fractures, especially since facilities have been improved for so doing by completion of the new operating suite with an x-ray fluoroscopic table in the orthopedic room, but we still treat some patients in Russell's. This study was undertaken to attempt to evaluate and compare each method. Since many of our operative cases are too recent for adequate follow-up studies and evaluation, this report is confined to 45 non-operatively treated cases, treated here and obtained from the diagnostic index from 1945 through February, 1950.

#### Method of Study

The records and x-rays of these 45 patients were obtained and carefully reviewed. The fractures were classified according to Bickel and Jackson.<sup>3</sup> This classification considers a non-comminuted fracture across the intertrochanteric areas as a Group I (Figure 1), the same plus some comminution in the region of the lesser trochanter as a Group II (Figure 2), and those with marked comminution and usually with displacement as Group III (Figures 3, 4, 5). Bickel and Jackson include in this classification the so called "reverse intertrochanteric fracture" as described by Wright.<sup>5</sup> There were no reverse intertrochanteric fractures in this group of 45 fractures treated non-operatively.

Two additional subvarieties of comminuted fractures were noted in this series (Figure 5). In one patient there was more comminution in the region

of the greater trochanter than elsewhere, and the fracture tended to assume a valgus position and healed in coxa valga. In three patients a long spicule of bone attached to one of the comminuted fragments was detached from the subtrochanteric region of the upper femoral shaft. The significance, if any, of this latter difference in fracture pathology is not known, the number of cases of this type is small, and no special classification has been used for these fractures.

Following review of the records and x-rays, the pertinent follow-up records were inspected. Each surviving patient was then sent a questionnaire to fill out and return. In some patients who could not be reached this way, the family physician or local welfare office was asked for and supplied information concerning the patient's status.

Results were classified as follows:

*Excellent*—Walks without assistance and without pain and limp, and has resumed former activities, fracture healed in anatomic position.

*Good*—No impairment of activities insofar as hip is concerned, walks without assistance on smooth surfaces and without pain. Some of this group had slight limp, coxa vara, and limitation of hip motion.

*Fair*—Solid union of fracture and could get about as could the "good" group insofar as hip was concerned, but had some pain in the hip and hence could be considered as incapacitated to varying degrees.

*Poor*—Could not get about at all without assistance, such as holding on to chair or using crutches, and grossly incapacitated because of hip.

*Satisfactory*—Fracture healing apparently satisfactory but other troubles prevented activities.

*Fatal*—Those who died prior to obtaining union

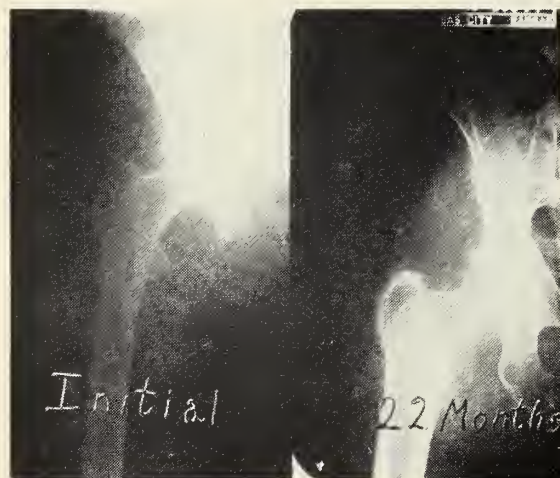


Figure 1. Group I fracture sustained, age 76. Treated by 41 days in traction. Result graded "good" 57 months after fracture.



Figure 2. Group II fracture sustained, age 64. Treated by 37 days in Russell's traction with crutches allowed 10 days later. Resumed full weight-bearing in six months and can walk three miles without pain, but with a slight limp. Graded "good" 42 months after fracture.



of their fractures or prior to dismissal from the hospital, whichever occurred last.

#### Clinical Analysis of Group

These patients as a group had passed their period of best health, to put it mildly, and many were in what would ordinarily be considered poor condition either for surgery or prolonged bed rest on admission, because of conditions antedating their trauma. Only nine of the group failed to present complicating factors on admission, the factors including deafness, blindness, old cerebral accidents, anemia, cholecystitis, diabetes, cardiac pathology, Parkinson's disease, leucic aneurysm, senility, and other degenerative conditions common to this age group. Several had osteoarthritis of the hip antedating the fracture. All presented difficult medical and nursing

problems in varying degrees. Many were apprehensive as to their ultimate survival. Most of the patients had been injured by a fall in their own homes or yards, but a few were injured by falling at work, and in a few cases the exact mechanism of injury could not be determined because of the patient's mental condition and lack of adequate anamnesis from other sources.

In these 45 patients the average age was 77.6 years, the youngest being 50 years of age, the oldest 94. The fracture was on the left side in 22 and on the right side in 23 patients. Thirteen of the patients were males, and 32 were females, including three colored females. The type fracture was placed in Group I in 11 patients, Group II in seven, and Group III in 27. Some difficulty was encountered in classifying a few of these cases, since it is our experience from operative cases that many of these fractures are more comminuted actually than the x-rays would indicate.

#### Treatment

All of this group were treated in skin traction, and this was the only method employed in 42 cases. In one each of the remaining three cases Percy Jones well leg traction, immobilization in a plaster spica, and skeletal traction, respectively, were used after

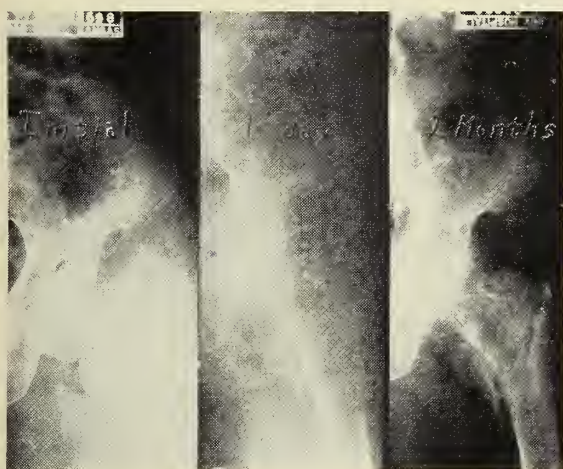


Figure 3. Group III fracture sustained at age 83. Treated in Russell's traction for 47 days. No complications in hospital and went home on 50th day. She resumed weight-bearing four months after injury and now walks without limp. Can go up and down stairs but does not leave house because of infirmity. Graded "good" 42 months after fracture.

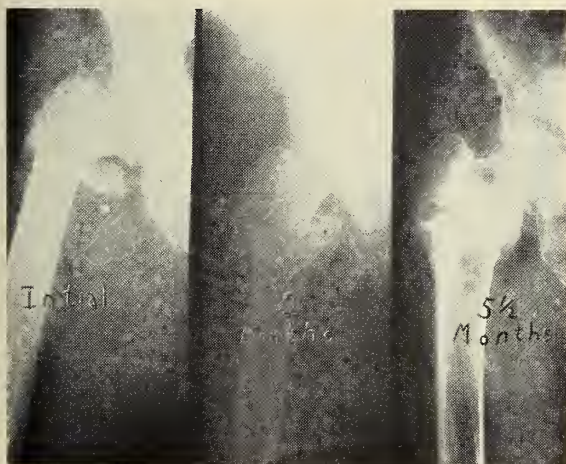


Figure 4. Group III fracture sustained at age 68. Treated by 63 days in Russell's traction. Some coxa vara developed when traction was removed, but patient was bearing full weight on leg in four months. Walks with a little limp which she attributes to arthritis of the opposite hip, and does all housework as before injury. Graded "good" 38 months after injury.

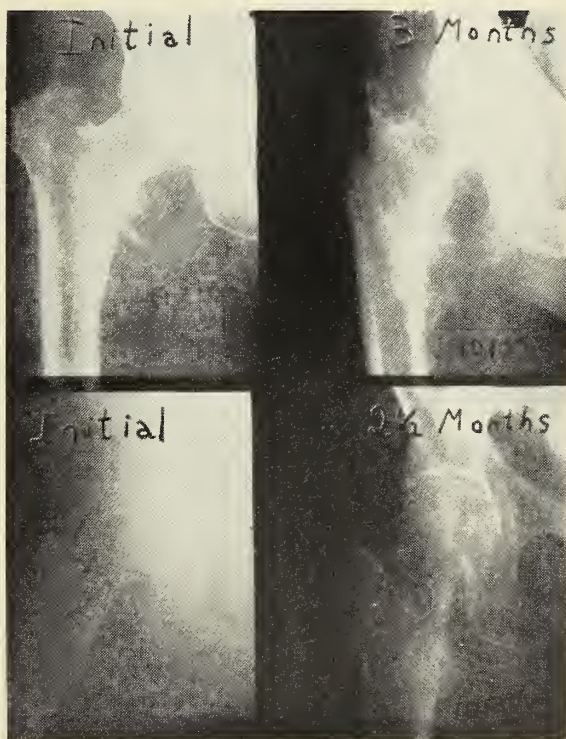


Figure 5. Upper—Group III sustained at age 79. Treated 41 days in Russell's traction. Is on her feet six hours per day and has resumed all housework. Graded "excellent" at 10 months after fracture.

Lower—Group III sustained at age 86. Had "valgus" tendency. Treated by 45 days in Russell's traction. Full weight-bearing started at 81 days. Does all housework as before fracture without limp or pain. Graded "excellent" 38 months after injury.



initial treatment with skin traction. In five patients, Buck's extension was employed, and in 40 Russell's traction was used (Figure 6). Counter traction was supplied by elevation of the foot of the bed. A trapeze has been routinely supplied to permit the patient to assist in moving for nursing purposes. When difficulty has been encountered with the patient sliding down in bed, thus allowing the Russell's footpiece to come in contact with the foot of the bed, a padded wooden box placed between the foot of the bed and the opposite foot has been found useful. Traction here has been applied to the skin by means of reinforced flannel strips, one on each side, applied to the skin with tincture of benzoin or "Ace" adherent, and kept in approximation by cotton elastic three-inch bandages. The areas about the head of the fibula, the patella, and each malleolus are well padded. The traction is checked at least twice daily by members of the orthopedic section, in addition to the usual observations by members of the nursing staff.

Usually eight pounds of weight will reduce these fractures adequately, and no sand bags, pillows, or rotating straps are necessary. However, we do not hesitate to apply more weight or to use these supplementary devices to control rotation if it is necessary. The usual fracture will reduce nicely in traction in the neutral position or slight abduction. However, if difficulty is encountered, traction with the double Russell's pulley moved to the slightly adducted position will often facilitate reduction. The mechanics of this seeming paradox have been well explained by Fox and Aphelbach,<sup>6</sup> but the reason for the success of the adducted position in obtaining reduction of the coxa vara may be more simply, if less accurately, understood by considering that this position reduces the amount of pull from the power-

ful adductor muscles, which tend to tighten up when irritation about the hip is present.

The progress of the fracture is checked daily by means of portable x-rays until position and alignment are judged to be satisfactory. This is usually obtained at the first portable x-ray 24 hours after admission. The absence of gross displacement and the presence of an angle of 130 degrees or slightly greater between the neck and shaft of the femur have been taken as constituting a satisfactory reduction. X-rays are then usually repeated at weekly intervals. The decision as to the length of time that the traction is to be left on is made on the basis of healing as demonstrated by x-rays and is also guided somewhat empirically by past experience as to what time would be adequate for a fracture belonging to that group.

When it is decided that the fracture has healed sufficiently, the patient is lifted out of bed into a wheel chair for a period of one hour twice per day, the traction being unhooked and resumed when the patient is in bed. After a few days of this, the films are repeated, usually sending the patient down to x-ray where a "bucky" film can be obtained. Should there have been no change in position, and healing appears to be progressing satisfactorily, the traction is then permanently removed, the patient allowed up in a wheelchair as desired, and taught to use crutches if the general physical condition permits.

Should a major degree of angulation occur, the patient may be put back in traction for an additional period of several weeks, but this has been found necessary in only three patients in this service. Lesser degrees of angulation occurred in 14 patients in this series at this point in treatment, but the matter was disregarded since a few degrees of coxa vara had not been found to be disabling to the average patient in this age group, and this slight change in position does not indicate impending non-union in this type fracture. The patient is usually dismissed when out of traction and able to spend most of the day in the wheel chair if the condition is such that crutch walking is not considered feasible. Weight bearing is deferred until the x-ray indicates that union has progressed to where it can be tolerated. Ischial weight bearing braces have not been used in this series.

Treatment of this type of fracture in Russell's traction is a laborious method and requires detailed supervision, not only of the traction but of the patient. The traction must be carefully watched to be sure that it does not slip and cause pressure sores on the leg or dorsum of the foot, and to insure that it is remaining effective. The patient must be kept in fluid balance, meticulous back care must be carried out to prevent decubiti from developing, if pos-



Figure 6. A patient in Russell's traction.



sible, or to heal them when small if they do develop. The patient needs reassurance that this period of bed rest in traction is compatible with survival and ultimate use of the leg. Ample medication for relief of pain must be given early so that the patient will move about enough to permit back care, but not so much that he will be lethargic and thus difficult to feed or more liable to incur respiratory infections. We believe that barbiturates are in general contraindicated in these patients.

The advantages of the use of an indwelling catheter to facilitate nursing care and prevent the bed from getting wet in elderly patients with poor bladder control must be weighed against the disadvantages of possible urethral or bladder infections possibly resulting from the catheter. The constipating effect of opiates, change of diet, and lack of activity must be considered and measures taken to prevent fecal impaction, and to recognize and treat it promptly if it occurs.

Infections, particularly pneumonia, must be closely watched for and energetically treated. Mental aberrations of a minor nature, tending to improve as the pain of the fracture becomes less during the first week and the patient gets adjusted to the new environment, need cause no concern, but progressive deterioration along these lines, especially if the patient is violent and persists in removing the traction, should indicate need for reevaluation of the patient and probably selection of some other method of treatment.

### Results of Treatment

Of these 45 patients, nine died in the hospital, eight of these before obtaining union of the fracture, a mortality rate of 20 per cent. The average age of these nine patients was 84.1 years, and average period of hospitalization was 37 days. As a survey of Table I will show, the majority of these patients were in extremely poor condition even in comparison with other patients in this series, and several were never in condition to operate on had

this been desired. Consequently, we do not feel that this figure represents a true picture of the hazards of treatment in Russell's traction in comparison to that of operative treatment. Even so, it compares fairly favorably with several reported operative series reported in the literature.<sup>2</sup> It might be questioned whether, since we are not yet reporting our operative group, we have kept these figures at low levels by doing late internal fixation on patients who had gotten into trouble in Russell's, but we know of no case during this time interval where the decision to operate was made after the eighth hospital day, and the average time from admission until surgery for the operative cases treated during this period has been five days.

The average time in traction required for the patients in this surviving series was 41.5 days; the average time spent in the hospital was 51.5 days. The average time until x-rays showed conclusive evidence of union to permit partial weight bearing was 70.7 days. The time at which 23 patients stated they actually had begun partial weight bearing varied from two months to nine months, the average being 4.1 months.\*

Analysis of time required and results obtained in the three groups is of interest, and although the numbers are small the differences are believed to be significant, and not explainable on the basis of the average age of patients sustaining Group III fractures being greater. See Table II.

TABLE II  
COMPARISON OF TIME IN TRACTION AND ANATOMICAL  
RESULTS OF THE THREE GROUPS OF FRACTURES

Group	No. of Patients	Average Age	Average time in traction (days)	Average time solid union (days)	Coxs vara over 15°
I	10	75	35	51	0°
II	7	72	41	68	0°
III	19	78.5	45	88	6°

### Complications During Treatment in Hospital

Bedsore, varying from reddened areas, which subsided without breakdown, to frank decubitus ulceration, were encountered in six of the nine non-surviving patients and in 16 of the 36 survivors. These were all small, superficial, and were usually located over the sacrum. When breakdown occurred they were usually healed by the time the traction was discontinued. In no instance did the decubitus appear to be a factor in the mortality and none required surgical treatment. It was observed that they were apt to appear at about the end of the first week and to heal fairly rapidly as the patient became pain free and more cooperative regarding back care.

\* All time intervals were from date of admission to hospital.

Table I Summary of Patients who Died While Being Treated in Traction

Age	Type fracture	Treatment	Days of survival after injury	General health before fracture	Complications noted on admission	Cause of death	Remarks
62	III	Buck's traction	47	Being treated at home 4 1/2 weeks	Cystitis Pneumonia pneumonia	Septicemic nephritis with obstructive and peritonitis	Yes According to family attention had preceded fracture
76	III	Buck's traction	40	hemiplegic	Hypochloremia myocardial infarction, anemia, arteriosclerotic heart disease	Brachycephalitis Cystitis	No Repeated transfusions collected anemia but general condition was never good
91	III	Buck's traction	16	Tumor, orthopedic, haemorrhoids, metastasis	Congestive failure	Acute dilatation of heart, Chronic hemorrhagic gastritis Sepsis	Yes Patient would not consent to treatment, only to die in peace
70	III	Buck's traction and Skeletal traction	79	Parkinson's disease Generalized demineralization	—	Confused bronchopneumonia Acute and chronic myocarditis	Yes Skin broke down in distal traction and required skeletal traction. Had vision on back leg and foot. No medical help surgery. Fracture not healed
83	III	Buck's traction	50	Diabetes Blebs frequently	Obesity Sepsis Septicemia Urinary and fecal incontinence	Brachycephalitis	No Gravely interdependent course
94	III	Russell's traction	21	Senility	Senile dementia Incontinent urine and feces	Brachycephalitis	No Believed she was going to die
84	III	Russell's traction	23	In county nursing home Senility	Come Delirium Fractured right humerus	Generalized arteriosclerosis Terminal Brachycephalitis	No Was never in operable condition
89	III	Russell's traction	16	Senility — unable to determine prior history	Emaciated	Senility	Yes Was never in operable condition
96	I	Russell's traction	25	Senility — unable to determine prior history	Emaciated Incontinent urine and feces	Pulmonary embolism Encephalomalacia Chronic focal encephalitis	Yes Was never in operable condition

Urinary infection was noted in three of the non-surviving group and four of the survivors. In all of these cases it is believed to have antedated the fractured hip.

Respiratory infections other than frank pneumonia were noted in four of the surviving patients. Pneumonia occurred as a clinical diagnosis in eight of the non-surviving patients and four of the survivors. Among the latter group the response to the usual antibiotics was satisfactory. In the former group it is difficult to evaluate the importance of the pneumonia in causing the fatality. It is of interest that in the four patients coming to autopsy pneumonia was considered as having been important in causing death in only one.

Fecal impaction was noted in one of the non-surviving and five of the surviving group.

Dementia of a transient nature and not sufficient to interfere with treatment was noted in two of the non-surviving group and 14 of the survivors. Major dementia was noted in five of the former group and one of the latter, in which case it required changing the treatment from Russell's to well-leg traction with improvement in mental status following.

#### Results as to Function

We have been pleasantly surprised to find that the majority of these patients are living and getting about in a manner consistent with their general physical condition. See Table III. Most of the group answered their own letters, and there was no evidence to suggest that the period of mental aberration which several had exhibited in the hospital while under treatment for their fractures had left any permanent changes. One patient had become psychotic after her return home, and has remained in that way for more than three years, but had exhibited no psychosis while in the hospital and had, in fact, had a completely uncomplicated course and an excellent anatomical and functional result. Two patients reported difficulty with knee motion, one "poor" and one "fair" result (both hemiplegics) and one "good" result reported occasional difficulty with knee motion. This certainly does not suggest that this non-operative treatment was in itself detrimental to the knee in a permanent sense. No peroneal palsies were noted in this group.

#### Summary

A series of 45 trochanteric fractures treated non-operatively during the past five years has been reviewed. It is a selected series in that it includes those patients who were not in operative condition

TABLE III  
FOLLOW-UP DATA ON 36 SURVIVING PATIENTS

Results	No.	Average Age	Average length follow-up	Group I	Group II	Group III	Coxa vara of 115° or less
Excellent	8	74.7	36 mos.	5	1	2	0
Good	8	73.3	38 mos.	2	1	5	0
Fair	6	70	36 mos.	1	1	4	4
Poor	3	81	34 mos.	0	0	3	0
Satisfactory fracture healing but disabled completely by other disabilities	6	74	22 mos.	1	3	2	0
Insufficient data to grade results	5	80		1	1	3	3
				10	7	19	7

on one hand and those who looked as if they would do as well, or better, in traction than with operative fixation on the other. The average age of these patients was 77.6 years; the mortality rate was 20 per cent; the average age of the survivors was 76 years, of the non-surviving group 84.1 years. Twenty-five of the 36 survivors are known to have become ambulatory again, six did not because of conditions not related to the fracture or the treatment and five could not be traced sufficiently to determine the result accurately. The anatomical results of treatment in traction were generally good in Group I and II fractures, and in many Group III fractures. However, six of 19 of these latter united with a coxa vara of 115 degrees or less. No patient with this much coxa vara is known to have had an excellent or good result, three of them had fair results, and one had a poor result. The treatment and complications have been described.

#### Conclusions

Russell's traction remains a useful method of treatment in selected patients with trochanteric fractures of the femur. It seems probable that improved medical management including antibiotics has rendered it a less hazardous method than it was a decade ago.

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# The Effects of ACTH on Liver Function\*

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The experimental background of adrenal steroid physiology lends ample support to the contention that intimate relationships exist between the adrenal cortex and liver function. Experimental adrenalectomy produces a hypoglycemia<sup>1</sup> and loss of glycogen<sup>2</sup> from the liver of experimental animals. By the use of adrenal cortical extract this defect can be corrected with a restoration of the liver glycogen.<sup>3</sup> The liver glycogen reaches a maximum with increasing doses of extract while elevation in the blood sugar and glycosuria continue to increase. The increase<sup>4</sup> in the liver glycogen is accompanied by an increased excretion of nitrogen suggesting that protein is being converted to carbohydrate while studies on liver slices<sup>5</sup> have shown a marked increase in the production of glycogen from pyruvate and d-lactate under the influence of adrenal cortical hormone. These effects of the adrenal cortical extract have been produced by 17-hydroxy-11-dehydrocorticosterone but not by desoxy-corticosterone acetate.<sup>6</sup>

In partially depancreatized animals the production of the glycosuria with adrenal cortical extract is associated with a ketonuria and acidosis, again pointing to the liver cell as the effector for the adrenal cortical extract, since the production of ketone bodies is known to depend on an intact liver.<sup>7</sup>

ACTH causes an increase in the fat vacuoles<sup>8</sup> in liver of rats fed on a high carbohydrate diet during the treatment period but not in animals fed on a high protein diet. Some disagreement exists as to whether the "fat metabolizing factor" of pituitary extracts is actually ACTH,<sup>9</sup> but it has been shown that this deposition of fat in the liver by pituitary extracts can be prevented by adrenalectomy.<sup>10</sup>

Cortical hormones cause an increase<sup>11</sup> in the serum albumin and a decrease in the serum globulin which again implicates the liver in this effect since it is known to be instrumental in the production of the serum proteins.

Some of the cellular enzymes of the liver have been shown to be influenced by steroid hormones. The alkaline phosphatase of the liver is increased by steroids with oxygen in the C-11 position but the arginase is not altered.<sup>12</sup> Conversely, the liver in vitro has the ability to alter chemically the steroid hormones,<sup>13</sup> and to "inactivate" them.

Berman, Sylvester, Hay, and Selye<sup>14</sup> reported that in experimental animals adrenalectomy decreased the deposition of fat, inhibited the deposition of protein and prevented the increase in size and number of

regenerating cells following partial hepatectomy. Adrenal extract corrected for these changes while DOCA did not. Rapport, Canzanelli and Guild<sup>15</sup> also demonstrated a reduction in regeneration of liver cells following adrenalectomy. Desoxyribonucleic acid was increased following adrenalectomy. Freidgood, Vars, and Zerbe<sup>16</sup> noted that adrenalectomy impaired the deposition of protein in the liver following partial hepatectomy and that DOCA restored the protein synthesizing power of the liver. The regenerative power of the liver was restored by cortical extract.

These are some of the experimental data pointing to the liver as an important target organ for the effect of adrenal cortical hormones. Changes in liver function as evidenced clinically and in the laboratory might be expected to occur under the influence of adrenal cortical hormones; however, there are as yet only a few references in the literature to these alterations. Bluemle<sup>17</sup> et al reported three cases of chronic liver disease treated with ACTH with apparently an acceleration in the clinical improvement. Bongiovanni<sup>18</sup> et al reported seven patients with cirrhosis of the liver treated with ACTH with little noticeable clinical effect but significant improvement in the serum albumin values. They mentioned bloody ascites and elevation of the blood sugar as undesirable side effects occurring in each of two patients.<sup>19</sup> Webster reported nine patients with acute and chronic liver disease treated with adrenal cortical extract with very promising clinical results although the course of treatment with cortical extract was for only a short period.

In the light of such experimental data, adrenal cortical treatment in liver disease might be expected to produce either beneficial or detrimental effects. The increase in the liver glycogen should serve to protect the organ against further damage and the suppressive effect on tissue inflammatory reaction exerted by cortical compounds might mitigate the development of fibrotic changes. The effect on regeneration of liver cells should also be beneficial. On the other hand the role of the adrenal in the production of fatty changes in the liver poses, at least superficially, a disturbing question, since such changes are a prominent feature of the histological changes in liver disease.

## Material

The patients in this group were divided into two groups.

\*From the Department of Internal Medicine, University of Kansas School of Medicine.

Group I. Twenty-one patients undergoing treatment with ACTH for various conditions, but showing no evidence clinically or biochemically of liver disease, were studied with liver function tests before treatment and during or immediately after treatment.

Group II. This consisted of 11 patients showing evidence of liver dysfunction, five of which showed clinical liver disease and seven of which showed only elevated cephalin cholesterol flocculation test in the presence of other disease processes. Liver function tests were done before treatment and late in the course of treatment.

The treatment consisted of injections of ACTH at six hourly intervals totaling from 40 to 60 milligrams per day for a period of approximately two weeks. One additional patient not included in either of the above groups received adrenal cortical extract. Other adjuncts to treatment are listed in the case presentations below. Liver punch biopsies were done before treatment on all of the cases showing clinical hepatic disease and on three of the cases after treatment.

#### Case Reports

Case 31, E. A. Diagnosis: Hanot's cirrhosis. This 43-year-old white male was first admitted with the complaint of jaundice for two or three weeks. The illness had begun four or five months before admission with feeling of weakness and malaise and progressively increasing anorexia, and occasional spells of vomiting after eating. A definite history of alcohol was obtained.

Physical examination revealed moderate jaundice. The tongue was a beefy red. The abdomen was quite distended with ascitic fluid and the liver edge was palpable five centimeters below the costal margin and non-tender. Spider angiomas were noted about the upper part of the chest and shoulders.

Red blood count was 3,590,000 with nine grams of hemoglobin, sugar 110 milligrams per cent, blood chloride 94 meq., carbon dioxide combining power 20.6 meq., cholesterol 300 milligrams per cent with 40 per cent esters, bromsulphthalein (two milligrams at 20 minutes) 15 per cent retention, total cholesterol 300, prothrombin time 70 per cent of normal, urinary urobilinogen three, fecal urobilinogen 64 milligrams.

Punch biopsy of the liver showed fatty metamorphosis and acute and chronic hepatitis with diffuse fibrosis.

Course in hospital: The patient was given ACTH, 40 milligrams per day for 17 days, and demonstrated an immediate increase in appetite to the extent that he was able to take a full Patek type of diet, and showed marked reduction in his nervous irritability. The beefy red tongue returned to a normal color,

the spider nevi disappeared, and the liver became reduced in size by about three centimeters. Urinary output increased from an average of 600 cc. a day to 4,000 cc. per day. The patient was seen four months later and had demonstrated continued improvement with a weight gain of 40 pounds without evidence of fluid retention.

Discussion: This case demonstrates the rapid improvement from a state bordering on complete hepatic failure as evidenced by the deepening jaundice, fluid retention and increased nervous irritability. The reversal of these trends along with a rise in the hemoglobin was definitely evident three days after the institution of ACTH therapy. It is difficult to say whether a primary effect of the ACTH was responsible for this improvement or whether it stemmed secondarily from the remarkable improvement in the patient's appetite with ability to consume a high protein diet.

Case 32, K. S. Diagnosis: Laennec's cirrhosis with bleeding esophageal varices. This 49-year-old white female was first admitted to the Medical Service November 30, 1949, with the diagnosis of Laennec's cirrhosis. In January of 1950 she was discharged from the hospital with a Patek diet and had done fairly well until one month before the present admission on August 13, 1950. Prior to this admission she had been having increased weakness, exertional dyspnea, a reappearance of ascites, anorexia, and hematemesis. A mild icterus was noted, and spider nevi were present on the face and left arm. The heart was slightly enlarged. The abdomen was markedly distended with ascites and was too turgid to allow palpation of the liver. The lower extremities were edematous.

Admission blood count showed 3,250,000 red cells, 9.5 grams hemoglobin. Sugar was 74 milligrams per cent, serum chloride 98.5 meq.; carbon dioxide combining power 23.2 meq.; B.S.P. five per cent retention; serum bilirubin 2.5 milligrams; alkaline phosphatase 24 units; cephalin cholesterol, one plus; thymol turbidity, 12 units; serum albumin one gram; serum globulin 3.5 grams; total cholesterol 200 with 40 per cent esters; prothrombin 40 per cent of normal, with no rise after vitamin K. Glucose tolerance test showed fasting blood sugar 174, first hour 279, second hour 304, third hour 270, fourth hour 325, fifth hour 293. A liver biopsy was done on the first admission and showed periportal fibrosis with some variation in the nuclei of the liver cells.

Course: The patient's urinary output was only 400 cc. a day. It rose to 1800 cc. on the eighth hospital day and again fell on the 12th hospital day. The patient had episodes of vomiting of coffee ground material while in the hospital which continued throughout her stay, and it was concluded that she



was bleeding from esophageal varices. ACTH treatment was started on the eighth hospital day following which there was a marked improvement in the patient's appetite and feeling of well being. Evidence of bleeding continued, however, and became more pronounced. On her 12th hospital day she was given 50 milligrams of benadryl and shortly thereafter developed a comatose state which, however, disappeared after about 24 hours. A serious exacerbation of her bleeding occurred on the 15th hospital day and in spite of transfusions and supportive therapy the patient expired.

Discussion: This patient showed a far advanced Laennec's cirrhosis complicated by persistently bleeding esophageal varices and a decreasing hemoglobin. ACTH therapy appeared to exert no influence on the course of the fundamental process although it did produce a salutary effect on the patient's appetite and feeling of well being. One may speculate that if such treatment had been instituted earlier in the course of this patient's disease it might have helped to reserve the vicious cycle of malnutrition and further liver damage.

Case 33, J. W. Diagnosis: Hemochromatosis, cirrhosis, delirium tremens. This 58-year-old white male was admitted with the complaint of bloating and constipation for two weeks, varicose ulcers on the legs and chest pain for two months. A strong history of alcohol was obtained. The patient was disoriented and confused, very tremulous and uncooperative. The tongue was unusually red. The liver was palpable in the midline eight centimeters below the costal margin and was slightly nodular and non tender. Edema or ascites were not noted.

Essential laboratory work showed a blood sugar of 95 milligrams per cent, blood chloride, 89 meq., carbon dioxide combining power 13.5 meq., cholesterol 210 milligrams per cent with 56 per cent esters; prothrombin time 80 per cent of normal. Punch biopsy of the liver showed large amounts of pigment in the portal spaces and liver cells, which showed a positive test for iron, and wide bands of proliferated fibrous tissue containing small round cells and macrophages transversing the lobules. Numerous fat deposits were noted. The pathological diagnosis was cirrhosis of the liver compatible with hemochromatosis.

Course: The patient was treated with 40 milligrams a day of ACTH for nine days. At the end of the first day of treatment he showed marked subsidence in the maniacal symptoms. Prior to treatment, the temperature had risen to 104 degrees F. and immediately subsided after treatment was started. The patient developed a voracious appetite after treatment was started which persisted throughout his hospital stay. The liver decreased in size by

about two centimeters during treatment. Hepatic function test showed little change, except for an elevation of the cephalin cholesterol to two plus during the course of treatment and a return to zero after termination.

Discussion: The two factors which were largely responsible for the clinical picture on this patient were the alcoholic delirium tremens state superimposed upon chronic moderately advanced liver disease. The most notable effect following the institution of ACTH treatment was in the acute manifestations of the delirium tremens with a prompt subsidence in the maniacal symptoms and of the fever with a return of the appetite, such that a high protein intake was again feasible. Changes in the underlying chronic liver disease could be considered only equivocal as seen in the slight but definite decrease in the size of the liver. The acidosis was corrected; however, this cannot be ascribed directly to the ACTH since the patient was given additional fluid therapy.

Case 34, N. H. Diagnosis: Laennec's cirrhosis. This 64-year-old white male was admitted complaining of diarrhea and bloating with indigestion for about six to seven weeks. He had noted a diminution in his urinary output. An alcoholic history was obtained. The heart was enlarged and the chest somewhat emphysematous. The abdomen was markedly distended with fluid and the liver could not be palpated because of the turgidity of the abdomen.

Admission red cell count was 3,700,000 with 10 grams hemoglobin. Wassermann and Kahn were four plus. Sugar was 75 milligrams per cent; cholesterol was 178 milligrams with 58 per cent esters.

A liver biopsy was attempted on two occasions, but because of the marked ascites and small fibrous liver it was not highly successful, showing only a small amount of liver tissue. The patient was given ACTH for 10 days at 40 milligrams per day. In addition to this, the patient was given mercurial diuretics and a high protein diet. During the treatment the patient became depressed, developed crying spells and showed a progression in the fluid retention with a weight gain of 12 pounds. At the conclusion of treatment, the urinary output increased and the patient lost the accumulated fluid until his weight was the same as initially. After being dismissed from this hospital, the patient was hospitalized elsewhere and laparotomy performed. The diagnosis of Laennec's cirrhosis of the liver was confirmed and the hepatic artery tied off at operation. The patient expired several days after operation.

Discussion: Again, this is a patient showing far advanced Laennec's cirrhosis with marked fluid retention. ACTH seemed to exaggerate the tendency to fluid retention and in addition produce an un-

favorable psychic response, both of which disappeared, however, at the termination of treatment. No beneficial effect can be ascribed to ACTH.

Case 35, R. M. Diagnosis: Laennec's cirrhosis. This 39-year-old white male was admitted with the chief complaint of anorexia and diarrhea of two weeks duration. There had been a 20 pound weight loss during the past six months. He had been a chronic alcoholic for 10 years. The patient was moderately jaundiced and large spider nevus was seen on the forehead. The chest was moderately emphysematous. The liver was five centimeters below the right costal margin and the spleen was palpable one centimeter below the left costal margin.

Blood count was 2,220,000 red cells, 7.4 grams hemoglobin, 38,000 white cells with 87 per cent polymorphonuclears, five per cent lymphocytes, six per cent monocytes and two per cent metamyelocytes. Blood sugar was 80 milligrams per cent; blood chloride, 90 meq.; carbon dioxide combining power, 21.8 meq.; cholesterol 148 milligrams per cent, 29 per cent esters; BSP, 10 per cent retention at 20 minutes. Liver biopsy showed hepatic cell cytoplasm to be granular and vacuolated, often completely replaced. Considerable hepatic cell nuclear variation and increase in fibrosis was noted. Pathological diagnosis was fatty metamorphosis, fibrosis of the liver, and acute and chronic hepatitis.

Course: During the first few days of the patient's hospitalization he became slightly disoriented and somnolent. He was then given a course of ACTH, 40 milligrams a day for eight days and 60 milligrams a day for four days and 30 milligrams a day for three days. After four days of treatment an improvement in the appetite occurred along with an improvement in the patient's sensorium. Improvement lasted for several days and then while the patient was on treatment there was a recurrence of his symptoms. He left the hospital with no change in status from his condition on admission. Contact was lost with the patient as he returned to his home community; however, it was later learned that he had died. No autopsy was obtained.

Discussion: A definite but brief salutary effect was noted during ACTH treatment but the relapse occurred during treatment. This would suggest that ACTH probably did not affect the progress of the fundamental process of liver disease, but probably exerted some effect on the manifestations of the disease, notably the anorexia, nervous irritability and somnolence.

Case 47, G. P. Diagnosis: Laennec's cirrhosis. This 59-year-old white male was admitted complaining of hemorrhoids of two years duration. He was a chronic alcoholic and the liver disease was found incidentally. The odor of alcohol was evident

on the patient's breath. The abdomen showed the liver to be four centimeters below the right costal margin, firm, tender, and slightly nodular. Questionable fluid was present. Large hemorrhoids were noted, both internally and externally.

Blood sugar was 95 milligrams per cent; blood chloride, 93 meq.; carbon dioxide combining power 20.3 meq.; serum cholesterol 318 milligrams per cent with 69 per cent esters; bromsulfalein, five per cent retention.

Liver puncture biopsy before treatment showed wide bands of proliferated fibrous tissue focally and dense infiltration with leukocytes, chiefly lymphocytes and proliferating bile ducts. Liver cells nearest these areas contained large multiple nuclei.

Course: The patient was treated with ACTH, 40 milligrams a day for 14 days (the ACTH was increased to 60 milligrams a day for five days during the middle of the treatment course).

Discussion: There seemed to be neither a beneficial nor detrimental effect in any way on this patient. It is noted that at the time of admission he was not suffering from any acute manifestations of liver disease, which was picked up only incidentally in the course of examination for hemorrhoids, which may have stemmed originally from the cirrhosis.

Case 52, F. R. Diagnosis: Biliary cirrhosis, chronic biliary obstruction. This 44-year-old white female had had jaundice following cholecystectomy for 16 years which was unrelieved by numerous surgical procedures. She was admitted to this hospital August 18, 1950, and further surgery was performed to relieve the biliary obstruction which resulted in a biliary fistula. The patient was emaciated and showed a generalized pigmentation resulting from the chronic jaundice.

Liver function tests on admission showed alkaline

TABLE I. Effect on Hepatic Function Tests

Case	Diagnosis	Alk Phos	B	C	Hanger's	A	C	Th Turb	A	C	Alb/Glob	A	C
Group I													
1	Rheum Arth	0	0	0	0	0	0	5	1	-4	1.1	1.6	0.5
2	Rheum Arth	1.3	9.0	6.2	0	0	0	5	1	-4	2.0	2.3	0.3
3	Rheum Arth	6.2	4.4	-1.8	0	0	0	4	4	-2	1.6	1.5	-0.1
6	Rheum Arth	6.6	6.1	-0.5	0	0	0	3	3	-2	1.4	2.0	0.6
7	Rheum Arth	4.0	4.1	0.1	0	0	0	3	3	-2	1.8	2.0	0.2
9	Rheum Arth	7.5	7.7	0.2	0	0	0	3	3	-2	1.6	1.6	0
11	Rheum Arth	6.9	5.0	-1.9	0	0	0	3	3	-2	1.0	1.2	0.2
14	Emphysema	10.0	7.5	-2.5	1	1	-1	3	3	-1	1.8	1.2	-0.6
15	Emphysema	5.6	5.2	-0.4	0	0	0	3	3	-2	2.1	2.0	-0.1
16	Asthma	4.0	4.4	0.4	0	0	0	3	3	-2	2.0	1.6	-0.4
20	Dermatitis	8.1	5.3	-2.8	0	0	0	3	3	-3	2.5	2.6	0.1
21	Retinitis	4.9	1.7	-3.2	0	0	0	3	3	-3	1.6	1.6	0
22	Retinitis	4.9	1.7	-3.2	0	0	0	3	3	-3	1.6	1.6	0
23	Chorioiditis	10.0	10.0	0.0	0	0	0	3	3	-3	2.5	2.5	0.0
36	Purpura	5.0	6.2	1.2	0	0	0	3	3	-2	1.5	1.5	0.0
41	Xanthoma	5.2	1.8	-3.4	0	0	0	3	3	-2	1.8	2.2	0.4
42	Rheum Arth	10.0	10.0	0.0	0	0	0	3	3	-3	1.7	1.8	0.1
43	Rheum Arth	10.0	10.0	0.0	0	0	0	3	3	-3	1.6	1.6	0.0
44	Retinitis	2.7	3.7	1.0	0	0	0	3	3	-1	1.8	2.2	0.4
45	Rheum Arth	6.8	4.0	-2.8	1	0	-1	3	3	-2	1.6	2.0	0.4
50	Retinitis	7.0	2.0	-5.0	0	0	0	3	3	-2	1.6	2.0	0.4
51	Ulcer. Colitis	15.0	15.0	-3.0	0	0	0	3	3	-2	0.4	0.7	0.3
Group II													
4	Rheum Arth	6.7	9.1	2.4	1	1	0	8	10	2	1.7	1.7	0
8	Rheum Arth	12.0	6.2	-5.8	3	4	0	3	1	-2	1.1	2.0	0.9
10	Rheum Arth	6.9	7.0	0.1	2	3	-1	3	8	-5	1.8	1.0	-0.8
18	Asthma	7.0	5.0	-2.0	2	2	0	2	2	-2	0.8	1.8	1.0
31	Cirrhosis	19.0	13.0	-6.0	3	3	-2	2	2	-17	0.5	1.1	0.6
33	Cirrhosis	10.0	5.6	-4.4	3	3	-2	2	2	-17	1.7	1.8	0.1
34	Cirrhosis	15.0	16.0	1.0	3	4	1	24	18	-6	0.8	0.7	-0.1
35	Cirrhosis	24.0	37.0	13.0	4	1	-3	1	0	-2	1.0	0.8	-0.2
42	Rheum Arth	4.5	5.0	0.5	3	3	0	7	5	-2	0.7	1.4	0.7
47	Cirrhosis	11.0	3.0	-8.0	3	3	1	1	1	-1	1.6	0.8	-0.8
38	Multiple Scler.	8.4	11.0	2.6	2	2	0	3	3	4	1.5	1.5	-0.1

Abbreviations: B, Before treatment; A, End of treatment; C, Units of change during treatment; Alk Phos, Alkaline Phosphatase (King-Armstrong); Th Turb, Thymol Turbidity; Alb/Glob, Albumin-globulin ratio; Rheum Arth, Rheumatoid arthritis.



phosphatase, 34 units; serum bilirubin, 12.0 milligrams per cent; chephalin cholesterol, four plus; thymol turbidity, six units; serum albumin, 2.0; serum globulin, 4.0; total cholesterol, 250 milligrams with 36 per cent esters; and prothrombin time 20 per cent of normal.

She was followed with supportive treatment and on November 3 exhibited a drop in blood pressure and gradually became more weak and irrational. The serum sodium was 118 meq. and the serum potassium 7.9 meq., and the N.P.N. 76 milligrams per cent.

Therapy was started with adrenal cortical extract (aqueous) with a rapid return to the rational state within 24 hours and improvement in well being. The extract (Upjohn) was given in five cc. amounts twice daily. After 14 days of treatment the serum electrolytes were sodium 139 and potassium 5.4 meq. The patient expired on November 27, 1950.

Discussion: In the course of chronic biliary obstruction this patient developed a picture resembling acute adrenal insufficiency with characteristic clinical and electrolyte changes. This syndrome responded to treatment with cortical extract with a prolongation of life for 14 days (Liver function and glucose tolerance data are shown in Table I).

#### Histological Observations

Case 31, E. A. (Figures 1 and 2). The section taken before treatment shows wide bands of dense collagenous tissue with scattered areas of bile duct proliferation. The liver cells themselves are shrunken and mis-shapen. Vacuolization of the cytoplasm is extensive with many areas showing hardly any identifiable liver cells. The section, obtained after treatment, is from an area which possesses much less fibrosis than the pre-treatment slide, making it difficult to interpret any change in the stroma. A striking difference is noted in the liver cells in that they are larger, showing the normal polygonal shape and

having lost the shrunken appearance noted in the previous section. The cytoplasm has a foamy reticulated appearance and vacuoles are quite rare. Some sections were stained with Gomori's<sup>20</sup> silver stain for glycogen and there is seen a marked increase in the glycogen in the cell following treatment. The amount of glycogen in the cell is great enough that it could account for the increase in the size of the liver cell as well as the reticulated foamy appearance of the cytoplasm noted on the routine stains. Sections stained with Schiff's reagent for the Feulgen reaction reveal an increase in the size of the nucleus and an apparent decrease in the concentration of desoxyribose nucleic acid, with a more distinct nucleolus on hematoxylin stain. Stains for alkaline phosphatase reveal no change from the pre-treatment picture. Likewise stain for esterase shows no detectable change.

Case 33, J. W. (Figures 3 and 4). The section taken before treatment shows the liver cells to be small and shrunken with many areas of extensive vacuolization of the cytoplasm. The nuclei are dark staining and pyknotic. The iron pigment of hemochromatosis is present. Following treatment the section shows the cytoplasm to be reticulated and foamy while the areas of vacuolization have largely disappeared. The nuclei are much larger and lighter staining and the nucleoli much more distinct. Silver stains reveal a noticeable increase in glycogen. No change is noted in the sections stained for alkaline phosphatase and esterase.

Case 47, G. P. The sections taken before treatment do not show any definite abnormality in the liver cells and the sections taken after treatment likewise reveal no change.

Discussion. The most noticeable changes are in the liver cells as shown in cases 31 and 33 where changes occur both in the cytoplasm and nucleus. The cytoplasmic changes seem to consist mainly of

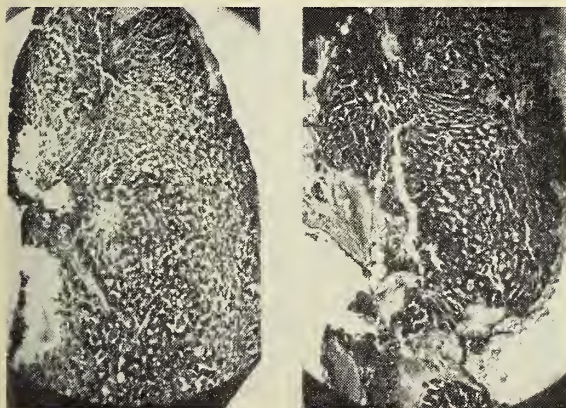


Figure 1. Case 31, E. A. Liver punch biopsy stained for glycogen by the method of Gomori. The section on the left is taken before treatment and the one on the right after treatment (X 100).

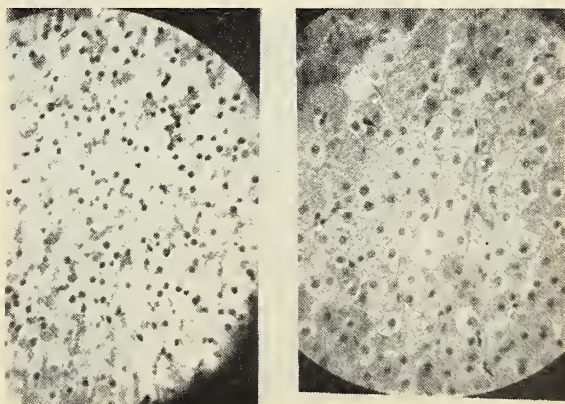


Figure 2. Case 31, E. A. Liver punch biopsy stained by routine H and E. The section on the left is taken before treatment and the one on the right after treatment (X 440).



a loss of fat vacuoles and an increase in the glycogen in agreement with similar changes reported in experimental animals under the influence of cortical extracts. The disappearance of the fat vacuoles is not entirely in agreement with the animal experiments, but it has been shown<sup>8</sup> that the extent of the fat deposition in the liver depends largely on the diet given to the animals at the time of administration of cortical extract. When a high carbohydrate diet is given the liver cells are more likely to show the vacuolar changes, while if a high protein diet is given they are less likely to do so. The condition in these patients parallels more closely those experiments in which a high protein diet was given since the Patek diet was administered. Such an alteration in the cytoplasm of the cell should conceivably be associated with changes in the intracellular enzymes; however, no changes are noted in these sections. Such changes as have been described in animals<sup>12</sup> might have followed had the treatment period been longer. Case 47 which showed no abnormality in the liver cell before or after treatment was clinically a compensated cirrhosis which was discovered incidentally.

#### Effect on Liver Function Tests

The results of the liver function tests are summarized in Table I. In neither group is there any statistically significant change in the alkaline phosphatase, although variations in either direction are common. No significant change is noted in the serum bilirubin, thymol turbidity or the bromsulphalein excretion.

Only three of the patients in Group II show a decrease in the cephalin cholesterol flocculation from pre-treatment values while the rest show slight increases. Three patients treated with cortisone show increases in the flocculation. No consistent change is noted in the serum albumin. In 13 of 19 patients in Group I there is a small decrease in the serum globulin while a smaller number of patients in

Group II show a decrease. These findings<sup>11</sup> are generally consistent with other reports in the literature to the effect that globulin decreases under adrenal cortical hormone treatment. In Group I, 12 of 19 patients show an increase in the albumin-globulin ratio which is mostly due to the change in the globulin fraction, while a smaller number in Group II show this change. Since the changes in the serum proteins occur quite as commonly among the patients with no evidence of liver disease, it is doubtful that these determinations or any of the determinations depending upon the protein structure of the plasma have very much validity as a reflection of liver function during ACTH or cortisone therapy.

The glucose tolerance tests are shown in Table II.

TABLE II. Effect of ACTH on Glucose Tolerance Test

Case	Before Treatment					After Treatment					Change in 2nd hour specimen.
	P	1	2	3	4	P	1	2	3	4	
6	78	200	265	225	160	95	214	270	243	167	5
7	103	178	214	177	155	107	190	200	187	128	-14
14	75	160	123	17	50	103	132	178	140	85	53
15	85	90	169	80	50	85	225	167	150	89	18
16	73	155	150	110	120	67	100	89	75	50	-61
20	83	160	126	92	112	150	170	165	96	106	35
21	97	140	108	54	70	72	200	140	50	63	132
22	75	120	100	92	95	70	107	103	92	85	3
23	103	215	135	107	92	100	245	204	169	144	69
41	92	135	92	120	60	75	190	169	110	89	77
42	95	135	95	128	63	89	128	122	63	70	-27
43	145	245	315	335	365	128	209	237	248	320	-78
46	103	214	174	135	85	80	107	54	50	60	-120
51	54	165	200	160	80	120	256	206	100	112	6
							Mean difference				10

Group II											
4	71	100	150	169	85	76	107	132	95	75	-13
31*	107	209	190	103	85	100	165	169	132	56	-21
33*	95	182	169	123	120	92	200	204	182	209	35
34*	75	230	204	200	160	258	365	382	408	358	178
35*	85	165	118	80	76	120	135	128	118	100	10
45*	85	209	110	160	85	89	182	170	95	67	60
47*	92	174	110	56	63	92	95		67	67	-
							Mean difference				40

\* Cases of Clinical Liver Disease.

The last column indicates in milligrams per 100 cc, the change in the second hour specimen after treatment compared to the second hour specimen for the pre-treatment glucose tolerance test.

Difference of the means 30

Standard Error ±10

P is <.01

The Group I patients show a mean increase in the second hour specimen of 10 mg. while the Group II patients show a mean increase of 30 mg. This difference is statistically significant and does show a definite trend toward exaggeration of the diabetic state in cases of liver disease. This does not seem

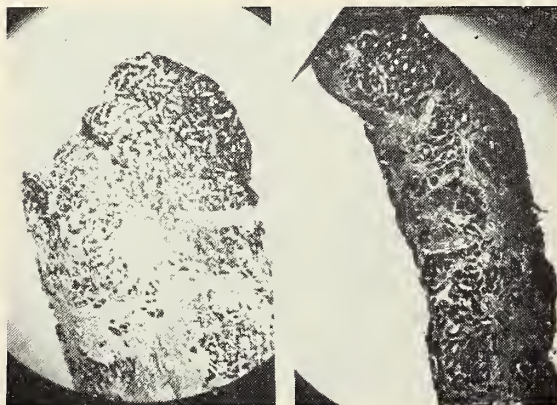


Figure 3. Case 33, J. W. Liver punch biopsy stained for glycogen. The section on the left is taken before treatment and the one on the right after treatment (X 100).

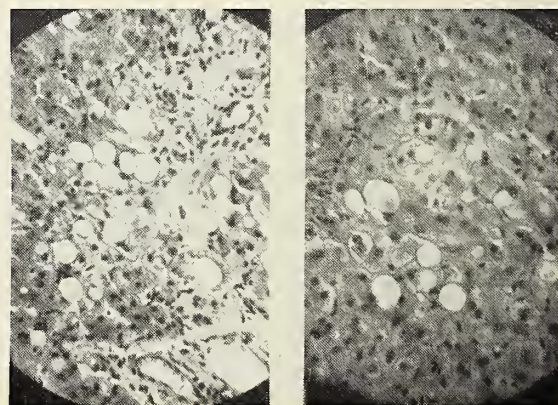


Figure 4. Case 33, J. W. Liver punch biopsy stained by routine H and E. The section on the left is taken before treatment and the one on the right after treatment (X 440).



to be a permanent defect, however, as it clears up after treatment. Two of the cases of liver disease which showed an increased diabetic tendency during treatment actually show more normal curves after treatment than before, associated in each case with clinical improvement in the liver disease.

Two factors are operating to decrease the glucose tolerance during ACTH therapy: one is the increased conversion of protein to carbohydrate and the other is decreased utilization of glucose in the tissues. The added factor of liver disease with its tendency to lowered glucose tolerance<sup>21</sup> may augment the diabetogenic effect of ACTH in some way. The decreased glucose tolerance attending ACTH therapy differs from ordinary diabetes in several respects: an increased insulin resistance has been reported, and there is little tendency to acidosis, even though corticoids have been shown to be active in the formation of ketone bodies. The tendency of the corticoids to cause alkalosis by effects on electrolyte excretion perhaps may oppose the production of acidosis. Another difference is noted in the histological sections since characteristically the liver in unregulated diabetes is depleted of glycogen while the liver in such a case of corticogenic diabetes shows increased glycogen.

#### Discussion

The data presented support the idea that the liver forms a significant link in the chain of reactions resulting from adrenal cortical stimulation in the human. Two questions might be considered regarding the role of the liver in this reaction: do adrenal cortical hormones alter liver function in normal or disease states and does liver dysfunction alter the effects of adrenal cortical hormones in the body?

The improvement in the clinical condition of patients with liver disease, the increased glycogen noted histologically following treatment with ACTH, and decrease in the number of fat vacuoles in the liver cells lend support to an affirmative answer to the first question. In the liver function tests themselves no particular change is noted except in the serum globulin, a change which cannot be ascribed directly to changes in liver function but which is likely to affect the liver function tests to some extent.

An answer to the second question is not immediately forthcoming, although in this work there is a tendency for the diabetogenic action of ACTH to be exaggerated in the group showing liver disease. The fluid retaining effects of the treatment are more noted in the cases with liver disease where fluid retention has been present before. One might speculate that other responses to the adrenal cortical hormones are also conditioned by the status of liver function by analogy to other steroids such as estro-

gen<sup>22, 23</sup> where the evidence is strong that liver dysfunction alters the response. In these cases the liver is not only able to conjugate the steroids but can effect changes in the substituting groups<sup>13, 24</sup> attached to the ring, and since the functional capacity of any steroid is highly dependent on the structure of the substituting group, any alteration in this mechanism might be expected to give rise to changes in the response to steroid. Work along this line is needed particularly in the field of intermediary metabolism of the 11-oxygenated steroids of the adrenal cortex.

The mechanism whereby the adrenal cortical hormones affect the liver remains a question for which only partial answers exist. The changes in carbohydrate metabolism are at present the most striking and therefore point to this as the primary mechanism. The storage of glycogen in the liver is evident in these studies, directly on the histological sections, and indirectly by the decreased glucose tolerance. The decrease in glucose tolerance could arise by several mechanisms, one of which might be the saturation of the liver cells with glycogen and a consequent slowing of glycogenesis, due simply to the mass action effect of the glycogen, as well as the decrease in utilization of glucose in the peripheral tissues.

The changes in carbohydrate metabolism are probably secondary to changes in the cellular enzymes, although these studies did not show any evidence of tissue esterase or alkaline phosphatase increase, but are not conclusive. Whether the changes in fat metabolism are secondary to the changes in carbohydrate metabolism or are a primary effect of the adrenal hormone cannot be answered. The disappearance of fat vacuoles from the liver cells in the two observed cases was definite and occurred along with the increase in glycogen. This could follow from decreased delivery of fat to the liver or increased utilization of fat from the liver, by the tissues.

The enlargement of the nuclei of the liver cells points strongly to an improved functional state of the liver cell, although definite evidence of increased cell division is not obtained.

The clinical improvement found in several of these cases was definite but seemed to be of a non-specific nature, and similar to the improvement seen in patients with other types of disease when treatment with adrenal hormones was used. These changes consisted of increased appetite, increased feeling of well being, followed by a gradual decrease in the signs of liver disease such as the hepatomegaly, spider nevi, and discoloration of the tongue. In one case where impending hepatic coma was evident there was a marked diminution in the symptoms with a continued improvement in the condition of the patient.

Any improvement in the signs of liver disease followed the appearance of these non-specific changes, so the most logical explanation for this is that the medication gives rise to a good appetite which allows the patient to consume large quantities of protein and thereby allows the liver disease to heal. Such a situation may be the factor that is necessary to alter the course in the chronic disease process from one of gradual deterioration to one of continued improvement. The appearance of a syndrome not unlike adrenal cortical insufficiency and corrected by adrenal cortical extract is suggestive that actual insufficiency may appear in the course of liver disease.

Such a possibility is supported by the finding that the urinary 17-ketosteroids are decreased in liver disease.<sup>25</sup> The adrenal insufficiency might arise through some abnormal metabolism of the steroids in the diseased liver or by a deficiency of epinephrine-like substances<sup>26</sup> produced in the liver and a consequent lack of stimulation of the pituitary adrenal mechanism.

#### Summary

1. The literature is reviewed showing relationships between the adrenal cortex and hepatic function in the fields of carbohydrate and fat metabolism.

2. Case summaries are presented on seven patients, six of whom received ACTH and one of whom received adrenal cortical extract. Two of these patients showed sustained improvement, three showed temporary improvement, one showed no change, and one became worse. Two died during the course of treatment and two others died some time after leaving the hospital. It is doubtful that the treatment was instrumental in the death.

3. Histological changes demonstrated in two patients include increase in the size of the nucleus of the liver cell, increased reticulation of the cytoplasm, diminution of fat vacuoles, and increase in the amount of glycogen in the liver cells.

4. No significant changes are noted in the liver function tests. There is a tendency for the diabetogenic action of ACTH to be exaggerated in patients with liver disease.

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## Reversible Cerebral Atrophy

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Gerard and Grinker<sup>1</sup> state that the view has been universally adopted that regenerative processes in the central nervous system of the higher vertebrates do not occur, though experimental work on animal embryos throws some doubt on this interpretation. Lichtenstein<sup>2</sup> states that regeneration of nerve fibers in the central nervous system of man does not occur. He states "loss of nerve cells is irreplaceable from an anatomic viewpoint. Physiological readjustment and recovery of partially damaged elements, however, result in clinical improvement. Regeneration of structures within the nerve cell, as for example, the Nissl substance, occurs if the vitality of the cell has not been too severely affected."

It is generally assumed that gross atrophy of the brain as shown on pneumoencephalogram, whether congenital, post-traumatic, post-encephalitic, arteriosclerotic, or due to unknown cause, is irreversible. Davidoff and Epstein,<sup>3</sup> in their monumental monograph on the abnormal pneumoencephalogram, make no mention of the possibility of gross atrophy of the brain, as verified by pneumoencephalogram, being reversible.

Because of the unusual clinical recovery, and the striking improvement in cerebral atrophy as shown by pneumoencephalography, the following case seems worthy of report.

### Report of Case

J.M., a 3-year, 10-month old colored male, was admitted to the University of Kansas Medical Center October 5, 1948. He had become ill approximately three weeks previously with malaise, fever, vomiting, and diarrhea. Frequent generalized con-

vulsions began three days after onset of illness, and after a week the child became lethargic and refused to talk. Within two weeks the patient had great difficulty in swallowing, ceased normal conjugate movement of the eyes, and lost the use of all extremities.

Examination revealed an afebrile child who lay immobile in bed except for an occasional slight movement of the eyes or head. He was completely conscious, yet seemed to stare straight ahead into space and would not talk. He lay with the legs in a frog-like position, arms extended, and fists clenched. There appeared to be almost total quadriplegia, though slight movements would occur on painful stimulation. The arms exhibited rigidity, yet the legs seemed flaccid. The deep tendon reflexes were present and equal bilaterally and were within normal limits. Babinski and Hoffman reflexes were negative. The child was unable to swallow or speak, and the gag reflex was decreased. The pupils were equal and reacted to light, and the eye grounds were normal.

The white blood count was 17,300 with 71 per cent polys, red cell count 4,230,000, urinalysis was negative, and blood calcium 11.2 mg. per cent. Analysis of the spinal fluid revealed no cells, sugar 47.6 mg. per cent, Wassermann negative, and total protein 18.6 mg. per cent. Spinal fluid culture was negative and x-rays of the skull were negative.

The clinical diagnosis seemed to lie between an encephalitis or glioma of the brain stem. On October 14, 1948, a pneumoencephalogram was done, replacing 130 ccs. of fluid with air. Films (Figure 1) revealed diffuse enlargement of the entire ventricular system, and an excess accumulation of air

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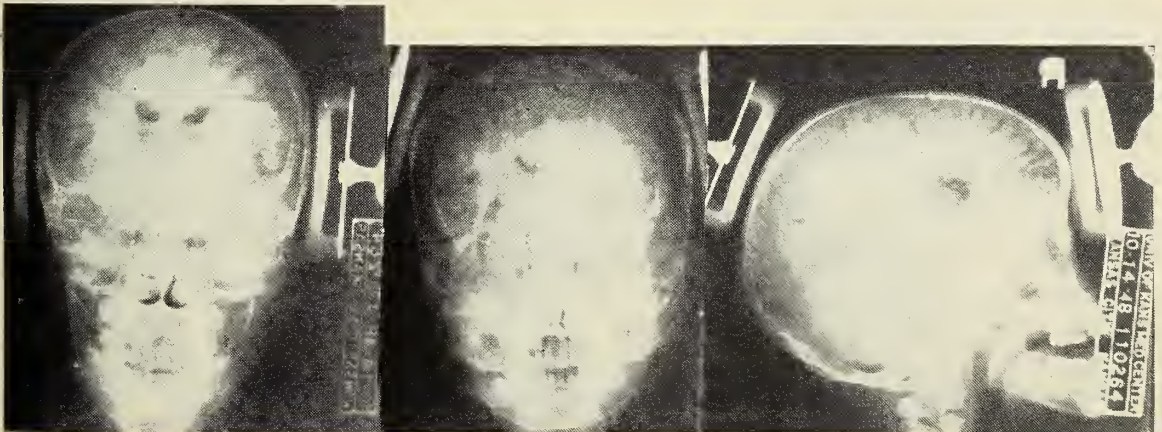


Figure 1. AP, PA and lateral views of pneumoencephalogram done October 14, 1948.

on the surface of the brain outlining shrunken gyri and widened sulci. This was interpreted as being rather severe generalized cerebral atrophy. On this basis, we felt that the child suffered from either a progressive degenerative disease of the brain, or a post-encephalitic atrophy, and that the prognosis was exceedingly poor.

Routine care, gavage feedings, parenteral fluids, and occasional infusions of plasma were given, but no specific therapy was rendered. Within one month the child began to show definite improvement, and in two months was talking and walking with the aid of braces. He was dismissed from the hospital February 19, 1949, and readmitted for evaluation April 16, 1949. At this time he walked quite well without braces, though he had a mild right hemiparesis. Psychometric examination revealed an I.Q. of 71.

Because of our interest in the surprising degree of recovery, pneumoencephalograms were repeated April 30, 1949, six and one half months after the initial air study. Films (Figure 2) revealed an apparent marked improvement in the encephalographic evidence of cerebral atrophy, in that the ventricles were definitely smaller and the subarachnoid markings on the surface of the brain had returned to within normal limits. The child was last seen in the out patient department October 8, 1949, and exhibited only a very minimal right hemiparesis. He walked almost normally, talked well, and had no complaints.

#### Discussion

The exact diagnosis in this case remains uncertain but the general label of encephalitis, type and cause undetermined, seems justified. The feature to be stressed is the fact that during the early course of the child's illness the clinical picture was that of severe diffuse brain involvement and the pneumoencephalogram revealed evidence of gross atrophy of cerebral substance. Six months later, after a

remarkable clinical recovery, a repeat pneumoencephalogram revealed that the cerebral atrophy had, to a large extent, disappeared.

Perusal of the literature reveals such a concept to be almost non-existent. Several authors caution against errors in interpretation of pneumoencephalograms in infancy. Zellweger<sup>4</sup> reports that in the first two years of life, pneumoencephalograms often appear abnormal because of the extreme softness and pliancy of the infant's brain. He examined seven infants whose first pneumoencephalograms closely suggested atrophy of the cortex, but when repeated a year or two later showed normal filling of the subarachnoid space. He recommended repeat air studies after the second year of life. Brines and Lord<sup>5</sup> pointed out errors in predicting subsequent mental age in children under three on the basis of the pneumoencephalogram. They reported six infants with mild cerebral atrophy on the basis of the pneumoencephalograms who subsequently proved to be normal mentally. They did not, however, repeat the pneumoencephalogram to see if such changes persisted, though they did conclude that the pneumoencephalogram in infancy is unreliable. Davidoff and Epstein<sup>3</sup> add a word of caution concerning the interpretation of pneumoencephalograms in infants, warning against the misinterpretation of subdural air for cortical atrophy. Our patient, however, is out of the age group of infancy, and subdural air is not present in the initial air study.

Apparently only one case has been previously reported with pneumoencephalographic evidence of reversible cerebral atrophy, and this was in an infant who, according to Zellweger, makes the pneumoencephalographic findings a bit inconclusive. Wyatt and Carey<sup>6</sup> reported this case, one of congenital neurosyphilis, with pneumoencephalograms at six months showing marked atrophy with dilated sulci and enlarged ventricles. Under antiluetic therapy, marked clinical improvement occurred, and

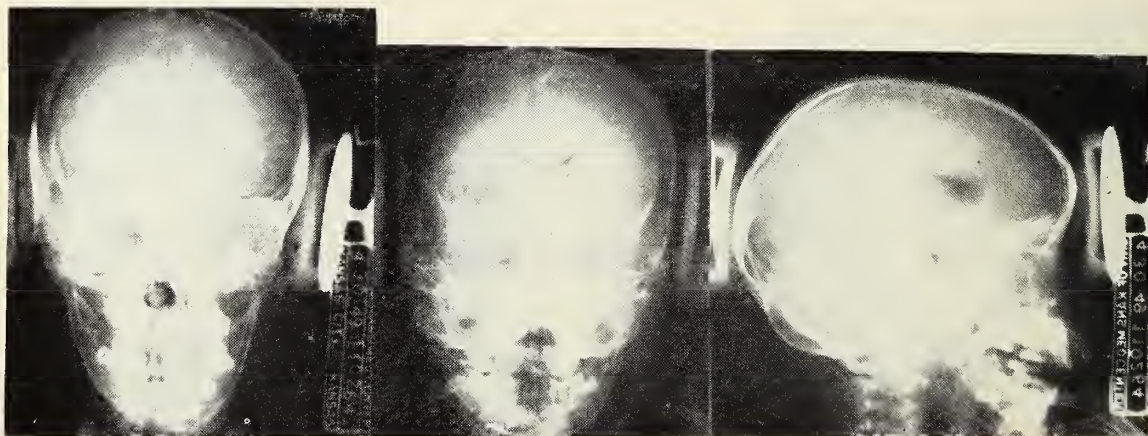


Figure 2. AP, PA and lateral views of pneumoencephalogram in same patient done April 30, 1949.



pneumoencephalograms at 21 months revealed definite improvement in the superficial markings, though the ventricles remained large.

In our patient, the pneumoencephalographic findings after an interval of six months apparently reveal definite evidence of return of gross brain substance as the child recovered from an apparent encephalitis. In the initial pneumoencephalogram, the transverse measurement from the lateral border of the frontal horn to the other in the AP view is 5.3 cm., and in the second air study 4.9 cm. The diameter of the body of the right lateral ventricle, measured from the uppermost limit of the septum pellucidum to the infero-lateral floor, is 1.6 cm. in the first pneumoencephalogram. The same measurement in the second air study is 1.0 cm. The widest sulcus on the later view of the first encephalogram measures .7 cm. and on the last one .1 cm.

It is recognized that one must be cautious in interpreting the surface markings on the encephalogram as being positive evidence of cortical atrophy. The size and shape of even normal spaces vary within wide limits. The frequent experience of different degrees of subarachnoid filling for no apparent reason is recognized by all. It is noted that in our second pneumoencephalogram cortical markings are seen only on one side. Whether or not this is an indication of so-called adhesive arachnoiditis may be argued. Some amount of subdural air may also be seen along the falx in the second air study. However, the positive difference in the size of the ventricles, as well as the marked differences in the surface markings, should be readily recognized.

One must also be aware of the fact that the ventricles may alter in size in a matter of hours after a pneumoencephalogram is performed. Schatzki, Baxter, and Troland<sup>7</sup> pointed out that films repeated on the following day after pneumoencephalography revealed enlargement of the ventricles, as compared to films taken on the first day, in 38 per cent of patients. However, the technical procedure of the two air studies in our patient was identical, with films being taken immediately upon completion of injection of air. The same views, utilizing the same roentgenographic technique, were taken. On both

occasions, the total available amount of spinal fluid was withdrawn in 10 cc. quantities, and replaced with an equal volume of air. Unfortunately, the total measured quantity of fluid obtained on the second air study was not recorded.

This report does not intend to lead one to believe that actual regeneration of nerve cells took place. We of course have no microscopic sections showing the type or degree of cell damage that had occurred. Undoubtedly, recovery of partially damaged elements did occur, and on the basis of the pneumoencephalogram, the so-called cerebral atrophy was, at least in some degree, reversible. Actually, it might be that if pneumoencephalography were often performed at the termination of the acute phase of encephalitis, atrophy would be a frequent finding. It is possible that follow-up air studies months later might then reveal that these pneumoencephalographic findings are often reversible. Obviously there is rarely indication for such a procedure, so it is hoped that this report may stimulate future reports to clarify this point.

#### Summary and Conclusion

The pneumoencephalographic findings of moderately severe diffuse cerebral atrophy usually justify the conclusion that severe permanent brain damage has taken place, and the prognosis for much clinical recovery is poor. These encephalographic findings are usually considered permanent. We report this case in which the pneumoencephalographic finding of cerebral atrophy was reversible. Clinical recovery took place, as well as a marked improvement in the gross structure of the brain as shown on pneumoencephalogram.

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# Prolapsing Redundant Gastric Mucosa\*

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In the Department of Radiology at the University of Kansas School of Medicine we have only within the last few years become definitely conscious of prolapse of gastric mucosa into the duodenum as a clinical entity. We are convinced it is a condition that can be diagnosed only by the roentgenologist because the clinical symptoms are varied and not classical of any pathological process. Judging from reports by others it is being diagnosed progressively more frequently and occasionally the diagnosis is proved at the operating table. There are still those who believe that a diagnosis of prolapsing mucosa is without clinical significance<sup>11</sup> and may be merely a confusing factor masking other causes of bleeding such as a duodenal ulcer<sup>25</sup> or a palpable mass<sup>26</sup> of antral carcinoma.

Prolapse of gastric mucosa was described by Schmeiden<sup>30</sup> in 1911, 40 years ago. The condition has been described at intervals by Forsell,<sup>8</sup> Eliason and Wright,<sup>6</sup> Meyer and Singer,<sup>17</sup> Pendergrass and Andrews,<sup>21</sup> Bohrer and Copelman,<sup>3</sup> Archer and Cooper,<sup>2</sup> Melamed and Hiller,<sup>15</sup> MacKenzie, Macleod and Bouchard,<sup>14</sup> and others.<sup>19, 22, 16, 31, 4</sup> Scott<sup>28</sup> stimulated new interest by his excellent article in 1946. More recently articles have appeared by Hawley, Meyer and Felson,<sup>10</sup> Nygaard and Lewitan,<sup>20</sup> Ferguson,<sup>7</sup> Appleby,<sup>1</sup> Cove and Curphey,<sup>5</sup> Rudner,<sup>24</sup> Moon and Speed,<sup>18</sup> and Udaondo, D'Alotto and Cabanne.<sup>29</sup>

If there is any question as to the correctness of such a diagnosis as prolapsed gastric mucosa it should be dispelled by the cases reported which have been proved by operation. Rudner,<sup>24</sup> Hawley, Meyer and Felson,<sup>10</sup> Pendergrass and Andrews<sup>21</sup> and many others, including ourselves, have seen cases come to operation in which the diagnosis was confirmed.

## Symptoms and Signs

There is no classical group of symptoms that will lead to a diagnosis of prolapsed gastric mucosa. The symptoms commonly are those that suggest an ulcer. The patient may complain of epigastric discomfort, a burning sensation in the stomach, a sense of fullness or pain suggesting pylorospasm or pyloric obstruction and there may be occasionally nausea and vomiting. It is often associated with hyperacidity, but not always. In a few cases there is a history of gastro-intestinal bleeding. Rarely a mass may be palpable. In one of our cases a mass was felt which led to a diagnosis of malignancy of the antrum.

The patient refused operation and now, five years later, has the same x-ray findings. The mass is inconstant. Obviously the diagnosis of malignancy was wrong. Cases have been described in which the mass could be reduced by manipulation, much as a hernia may be reduced with the palpating fingers.

## Roentgen Findings

The classical descriptive terms used by writers in describing the duodenal bulb are a "mushroom," "umbrella," or "jockey-cap" appearance. With an outburst of modernism, one writer has called it the "atom bomb" appearance (Figure 1). The loose

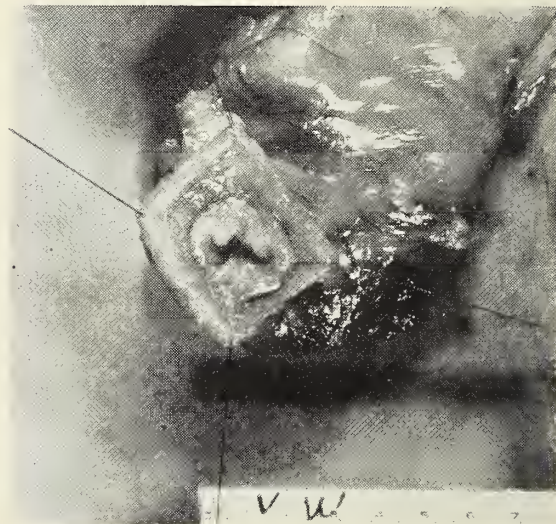


Figure 1. Case 2. Open end of duodenum showing prolapse of gastric mucosa through the pyloric ring.

mucosa of the antrum slips through the pyloric canal to fill the base of the bulb. The base is concave. The free mucosa presents a "crumpled silk" pattern. In the pylorus the mucosal folds stand out as isolated parallel strands running into the bulb as multiple opaque streaks. There may be such slight mucosal herniation that it will be overlooked, or it may be transient and not observed every time the stomach is examined. The other extreme may be a filling defect due to a constant mucosal herniation that amounts to an intussusception, in which case there is a permanent defect and a palpable mass that may lead to a diagnosis of antral carcinoma. Such a case has recently been seen and reported to us by Drs. Kubin and Hiebert.<sup>13</sup>

There is no disturbance in peristalsis in the average case. The duodenal bulb retains barium well and is not irritable. In our cases there was no six

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hour gastric retention. Eliason and Wright,<sup>6</sup> in 1925, described a pedunculated tumor or polyp located in the antrum that "is swept or carried into the pylorus by a peristaltic wave and produces a typical ball valve syndrome attack of pain." This, in our experience, is even more rarely seen than is mucosal herniation. It should be differentiated by the circumscribed nature of the mass in the duodenum.

#### Etiology

Many theories have been suggested to explain the etiology of this condition. It seems logical to conclude that the attachment of the mucosa of the antrum to the underlying tissue is not firm. When this is associated with excessive motility of the muscularis it is not unreasonable to assume that excess mucosa in the antrum might be forced through the pylorus. It also seems reasonable to assume that, after a period of time, fixation of this loose tissue in the pyloric canal may result in edema, congestion, local gastritis and, at the point of constriction, even a palpable mass.

Scott,<sup>28</sup> after reviewing anatomy texts and studying 126 stomachs at autopsy, concluded that prolapse results from an excess and abnormal mobility of the pyloric mucosa on the muscularis. He believed that "the structural conditions necessary for the development of a prolapse are inherent in the walls of the normal stomach, but a prolapse occurs only after the fibers in the flexible submucosa have been stretched and loosened by abnormal gastric peristalsis, which in turn is irritated by neurogenic or chemical stimuli, or a combination of both."

The opinion that there is independent movement of the mucosa was offered by Forsell<sup>8</sup> in 1923. By pictures of anatomical preparations, series of roentgenograms and photographs of the digestive tract of living subjects, he rather convincingly demonstrated that "the muscularis mucosae forms the special contractile organ of the mucous membrane which, being attached to this one and to the submucous layer, is able to displace the mucous membrane in all directions by means of transversal, longitudinal and oblique fibers."

Golden<sup>9</sup> also emphasized the free movement of the mucosa of the stomach over the muscularis. He described a change in mucosal direction from transverse to parallel with the long axis of the stomach when antral systole occurs. There is a stretching mechanism he considers normal. The failure of the stretching mechanism may account for herniation of prepyloric mucosal folds through the pylorus. Golden also expressed the opinion that pyloric canal thickening, a condition that must be considered with the subject of mucosal herniation, is related to antral gastritis. Schindler<sup>27</sup> has verified by gastroscopic observations the formation of radial folds with

antral peristalsis. Eliason and Wright<sup>6</sup> theorized that as a result of chronic, low grade inflammation the mucosa becomes hypertrophied. This hypertrophied mucosa is then pushed toward the pyloric canal by peristalsis and may be pushed through the pylorus in some cases.

Rees<sup>22</sup> believed that narrowing of the pyloric diameter precedes the actual change in the gastric mucosa and that the narrowing is followed by hyperperistalsis of the stomach in its effort to force its contents through the smaller opening. This action then loosens the attachment of the mucous membrane to the muscularis in the constricted area. Archer and Cooper<sup>2</sup> report a case in which at operation "on passage of the examining finger through the pylorus a very tight, firm ring was found and the mucous membrane in the prepyloric portion of the stomach was less firmly attached than usual. When the duodenal bulb was incised, there was a protrusion of gastric mucosa through the pylorus resulting in somewhat the appearance of external hemorrhoids about the anus."

This case tends to verify the observation made by Rees. Bralow and Spellberg<sup>4</sup> cite cases of prolapsed mucosa due, in their opinion, to gastritis. They say, "A benign peptic ulceration located at the base of the duodenal bulb or in the prepyloric area may, in the process of healing, produce a local gastritis. This inflammation may lead to a localized hypertrophy of the gastric rugae of the prepyloric areas which eventually may prolapse through the pylorus into the base of the bulb at a time when no other sign of the marginal ulcer may be present."

Melamed and Melamed<sup>16</sup> reported recently four cases of right heart failure with gastrointestinal symptoms and evidence of prolapse of gastric mucosa into the duodenum. It was their suggestion, after study of these cases (two found at autopsy), that markedly redundant edematous and mobile gastric rugae associated with edema of the mucosa may provide an adequate basis for increased mobility of the gastric mucosa and subsequent prolapse into the duodenum. They suggest that in many cases of congestive heart failure gastric symptoms may be due to this condition.

#### Incidence

Wellens and Spyckerelle,<sup>31</sup> in 1949, were able to find only 60 cases reported in the literature. These authors estimate mucosal prolapse is seen in five per cent of stomach examinations. Scott<sup>28</sup> analyzed 19,228 hospital admissions. Of this number 1,346 upper gastrointestinal examinations were made. The pathology revealed was as follows: 0.96 per cent gastric ulcer, 24.1 per cent duodenal ulcer, and 1.04 per cent redundant gastric mucosa. Redundant mu-

cosa was more commonly seen than was gastric ulcer. Cove and Curphey<sup>5</sup> found 3.38 per cent in 650 consecutive examinations.

In our Department of Radiology we have diagnosed 20 cases of mucosal herniation during the year 1950. In this period of time 2,312 stomachs were examined of which 16 per cent were diagnosed duodenal ulcer, two per cent gastric ulcer and 0.86 per cent prolapsed gastric mucosa. Three patients have been operated upon and the diagnosis proved. When we consider the relatively small number of cases reported in the literature as compared with one to five per cent seen by some investigators in routine examinations of the stomach, we wonder if the condition is being accurately diagnosed by those who see so many, or if we who see so few are missing some of them.

#### Differential Diagnosis

If there is a palpable mass or constant defect in the pylorus, as in the case described by Kubin and Hiebert,<sup>13</sup> a diagnosis of carcinoma of the antrum of the stomach will likely be entertained. In our case the defect was not so marked, but the antrum could be rolled beneath the palpating fingers, leading us to an erroneous diagnosis of carcinoma. One has to wonder what we called this condition 10 years ago when we were not so keenly aware of its possibility. I think undoubtedly chronic duodenal ulcer was diagnosed because of bulb deformity. Now, unless a crater is visualized, a diagnosis of duodenal ulcer is not justified if the classical picture of herniation of mucosa is seen. There have been reports of an ulcer and mucosal prolapse in the same case.<sup>15</sup> Also malignant disease has been found associated with mucosal prolapse.<sup>23</sup>

Hypertrophy of the pyloric muscle was described by Kirklin and Harris<sup>12</sup> in 1933. They reported 81 cases seen in a five-year period. It was their conclusion that this condition was usually associated with duodenal, gastric or cholecystic disease. They noted that the stiff pylorus tended to invaginate into the duodenum. They did not describe with this condition the central umbrella defect so characteristic of mucosal invagination. A definite mass was not felt in their cases.

#### Treatment

The treatment of prolapse of the gastric mucosa is usually symptomatic and conservative. In the average case the symptoms are relatively mild and can be controlled by medical therapy. If bleeding is not readily controlled, if symptomatic treatment for ulcer without definite demonstration of an ulcer has been unsuccessful, if there is partial obstruction at the pylorus or if a mass is palpated and a defect is seen which remotely resembles a carcinoma, operation is the treatment of choice.

The operative treatment of prolapsed gastric mucosa has not been standardized. Several operations have been described. These are partial gastrectomy, pyloroplasty, pyloroplasty (Horsley, Finney or Heineke-Mikulicz) with excision of redundant mucosa and gastrotomy with excision of redundant mucosa. It is probable that a single technique is not suitable for all cases.

Three cases that have been treated by operation at the University of Kansas Medical Center are here reported briefly.

Case 1. T. O., a female aged 36, entered the University of Kansas Medical Center January 1, 1950. Eight months after the birth of a child in 1947 she had a severe hemorrhage from the alimentary tract. A diagnosis of duodenal ulcer and possible prolapse of gastric mucosa was made by her local physician. After entering the hospital a splenomegaly was found and the diagnosis of prolapsed gastric mucosa was confirmed. An ulcer was not seen by x-ray examination. There was a slight hyperacidity. A splenectomy was done at the same time the prolapsing gastric mucosa was excised followed by a Horsley type of pyloroplasty. No evidence of ulceration was found at the operation or by the pathologist. There was edema and recent hemorrhage in the gastric mucosa. A diagnosis of Banti's disease was made. To date there has been no recurrence of bleeding.

Case 2. V. W., a male aged 46, entered the hospital on March 6, 1950, with a diagnosis of duodenal ulcer and a history of six episodes of gastrointestinal bleeding since November, 1949. The x-ray examination showed a typical "mushroom" deformity of prolapsing gastric mucosa. There was a definite hyperacidity. At operation a thickening was found at the pylorus with a widening of the first portion of the duodenum. A partial gastrectomy of the Hofmeister type was done. The gross speci-

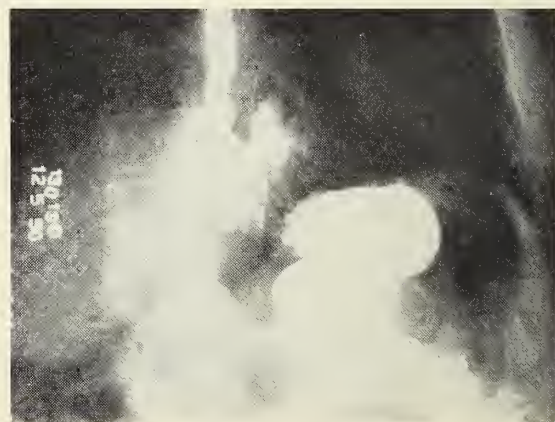


Figure 2. Case 3. Hiatal hernia and hernia of gastric mucosa into duodenum. Mucosal prolapse proved by operation. Source of bleeding not found.



men showed a prolapse of the gastric mucosa (Figure 2). The pathologist reported "section of stomach reveals the mucosa to be densely infiltrated by mononuclear cells. The lymphoid follicles are above and below the muscularis mucosa, some being hyperplastic. The cells in the mucosa are prominent and congested. The subserosa shows numerous foci of recent hemorrhage. Section at the pylorus reveals the mucosa to contain a lesser number of glands, some of which are distorted in the lamina propria. In areas the fibrous tissue extends into the muscle layer as a thickening of the normal architecture. There is no evidence of malignancy or ulceration." This patient has had no bleeding since the operation and is now free from gastric symptoms.

Case 3. F. O., a 74-year-old female, entered the hospital December 3, 1950, with a history of hematemesis and melena for three days. She received two transfusions before entering the hospital. X-ray showed a large diaphragmatic hernia and a prolapse of the gastric mucosa. The hernia was repaired and a pyloroplasty of the Horsley type was done. The source of the bleeding was not found. She made a good recovery and there has been no bleeding since the operation. At the time this is written, only six weeks after the operation, the final result cannot be determined.

The three patients recorded above were treated primarily for bleeding from the upper gastrointestinal tract. In none of the three are we sure that the bleeding was from the prolapsed gastric mucosa. The pathologist's report in Case 2 indicates that the prolapsed mucosa was probably the source of the bleeding.

More than 40 recorded cases of prolapsed gastric mucosa have been treated by operation and this type of therapy now appears to be well established in selected cases.

### Conclusions

1. Prolapsing gastric mucosa is not as rare as the few cases reported seem to indicate.

2. The diagnosis must be made by accurate roentgen observation. Symptoms are not sufficiently well standardized to justify a clinical diagnosis.

3. The average case presents the "mushroom" deformity of the bulb considered characteristic of mucosal herniation. Occasionally the deformity may not be distinguished from carcinoma.

4. The cause of prolapse of the gastric mucosa has not been determined. The anatomical demonstration that the mucosa may move independently of the underlying structure of the stomach when associated with hyperperistalsis seems to us sufficient evidence that the condition may occur without presupposing some associated serious pathological process. Gastritis of the antral mucosa may be

found at operation. We raise the question as to whether the gastritis is cause or effect.

5. Surgical treatment is indicated when there is gross or continued bleeding, when carcinoma is suspected, when there is partial pyloric obstruction with vomiting, and when medical treatment has failed to relieve symptoms.

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# A Re-evaluation of the Surgical Treatment for Duodenal Ulcer as Based on Experimental and Clinical Observations

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Inasmuch as surgeons are still called upon to operate on patients with duodenal ulcer and its complications, it is mandatory that a surgeon perform an operation which meets the criteria for satisfactory results. These criteria must be based on sound experimental investigation of the physiology of the upper intestinal tract, as well as the experience gained in the study of patients operated upon for ulcer.

For well over a half century, surgeons have been operating upon the stomach and duodenum for the treatment of peptic ulcer. Until recently, most of the operations were employed purely on an empirical basis with very little knowledge of the physiological concepts determining a good operation for ulcer. It has long been known that the most important factor in the genesis and production of peptic ulcer is the gastric acidity with the associated pepsin, and it follows that most surgical procedures today are designed to abolish, or greatly diminish, acid secretion.

The operations employed, however, vary primarily in their attack of the various phases of gastric secretion: the cephalic phase, the gastric phase, and the intestinal phase. Granting that the gastric acidity is the most important factor in ulcer genesis, there have also been found many precipitating or abetting influences to the ulcer diathesis. Obviously if acid were the only factor in operation, all stomachs containing acid would probably present ulceration. This, of course, is not the case, and the hypothesis of mucosal predisposition must be considered. Many of these predisposing influences have been studied and have, as a common denominator, the element of mucosal ischemia and include such conditions as arterial thrombosis or embolus, arterial spasm, hemoconcentration, venous stasis due to portal obstruction, fatty embolism, and many such influences. Because of the many and diverse predisposing conditions, it is natural that the operative treatment has concerned itself primarily with the ablation of the acid factor in the ulcer genesis and it is the background of the primary acid factor which is discussed here.

## Early Experimental Investigations

In the early experimental investigations of the ulcer problem, it was necessary to select an animal suitable for ulcer study. Of all the experimental

animals, it was found that the dog presented the unique situation satisfying the requirements for this type of investigation. The dog is an animal in which ulceration does not occur spontaneously. This is in contra-distinction to man, in which spontaneous ulceration is common. It was felt that if ulcers could be produced in dogs with regularity, then operations could be compared as to the protecting ability against such uniform ulcer production.

Mann and Williamson<sup>1</sup> had produced peptic ulceration in dogs by the transplantation of the alkaline secretions to lower levels of the small intestine, thus spatially separating the acid from the alkaline secretions. Their experimental preparation, however, did not produce a uniform and completely predictable occurrence of ulceration. Because of the capacity of histamine to specifically stimulate the parietal cells of the stomach to secrete increased amounts of hydrochloric acid, it naturally followed that histamine would be employed in an attempt to produce ulceration in animals. Whereas several investigators had been unsuccessful in this, it was not until Code and Varco<sup>2</sup> incorporated histamine in a beeswax mixture that experimental production of ulcers in dogs was uniformly accomplished. The histamine-in-beeswax mixture injected intramuscularly once daily into dogs will produce a high and sustained elevation of gastric acidity for a period of 24 hours. When it is injected daily over a period of 40 days, the occurrence of ulceration, predominantly duodenal, is a uniform and regular occurrence.<sup>3</sup> This useful tool became universally popular for the study of ulcer genesis and treatment.

## Type of Resection

Following this, the earliest significant piece of research concerning the ulcer problem was the natural employment in dogs of the many operations ordinarily performed on patients, in order to compare their protective ability against the histamine-provoked ulcer. The contribution of Lannin<sup>4</sup> is significant in which seven series of experiments were carried out (see Figure 1). In the first series a group of dogs were subjected to the operation of gastro-jejunostomy. After a month's convalescence, these dogs were begun on a daily series of histamine-in-beeswax injections. All four dogs so treated developed large perforating jejunal ulcers. Perforations



were noted in two dogs after three and 13 daily injections, and in two dogs the large ulcers were noted after 40 histamine injections.

This series of experiments clearly indicates that gastro-jejunostomy affords no protection whatsoever against the histamine-provoked ulcer. As a matter of fact, from human experiences and many subsequent experiments in dogs, gastro-jejunostomy hastens the occurrence of ulceration. It has been shown that patients undergoing gastro-jejunostomy for whatever cause have a 20 to 40 per cent chance of developing stomal ulceration, clearly demonstrating that gastro-jejunostomy no longer enjoys the enthusiastic following of two to four decades ago.

The next series of experiments concerned the popular operation of antral excision or small gastric resection. Four dogs were subjected to such an operation and after 35 to 40 daily injections of histamine-in-beeswax all dogs presented large jejunal or stomal ulceration, again indicating that small gastric resection does not protect against the histamine-stimulated ulcer in dogs. From further experimentation this fact is undoubtedly due to the failure of excision of enough acid-bearing tissue of the stomach. It is also apparent that excision of the antrum with its presumable hormone, gastrin, according to the Edkins' phenomenon is not sufficient for the treatment of ulcer.

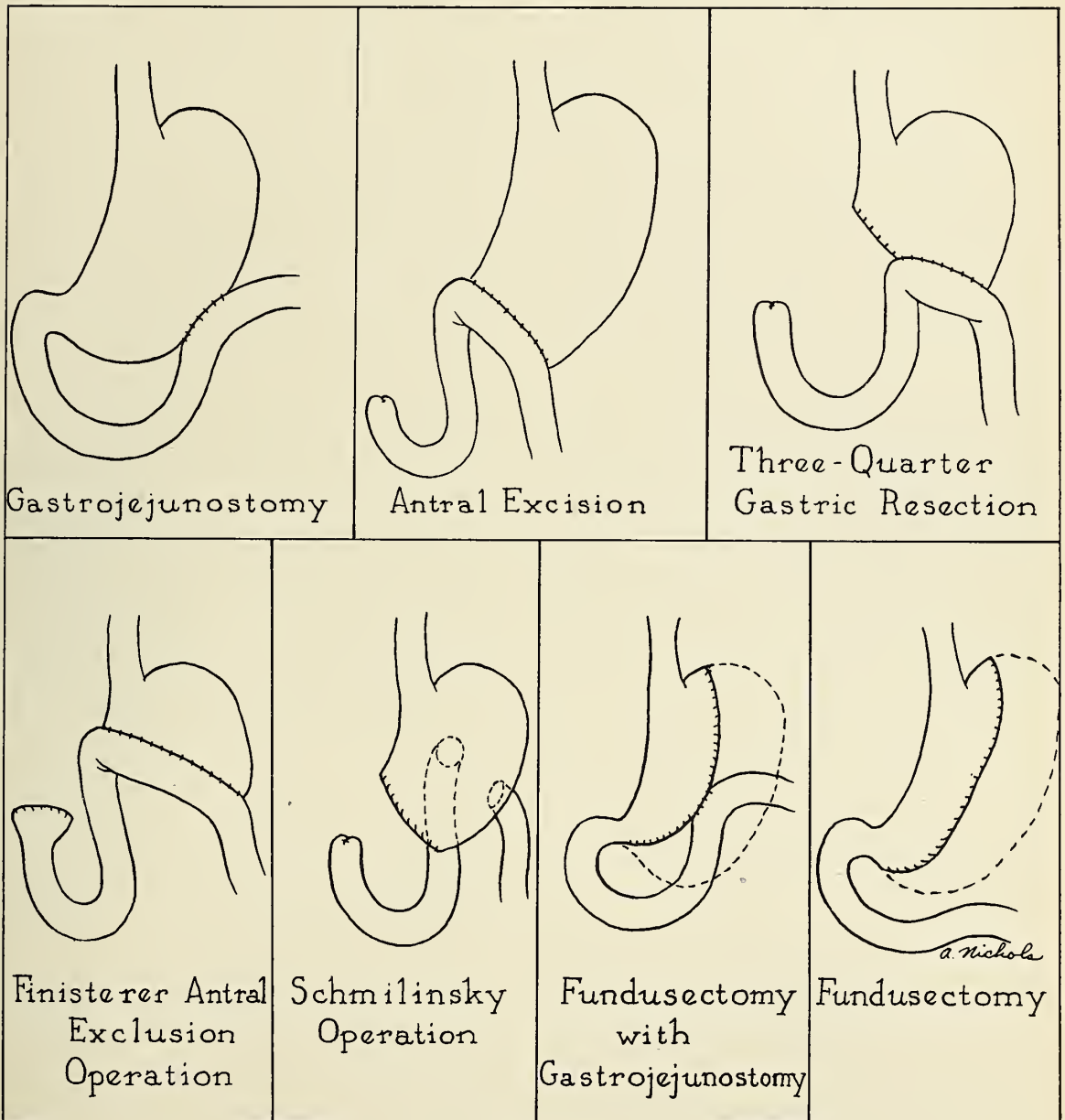


Figure 1

The third series of experiments utilized the three-quarter gastric resection. Eight dogs were subjected to such an operation, and all received 40 daily injections of histamine-in-beeswax, after which time no ulceration whatsoever was noted in any of these dogs. This showed clearly that it is necessary to excise three-fourths of the stomach, or that much of the acid-secreting tissue, to protect against the maximum stimulation of histamine-in-beeswax. The refinements and attributes of the three-quarter resection will be discussed more in detail subsequently.

The previously popular antral exclusion operation described by Finsterer was employed in the fourth series of experiments. This operation connotes an extensive resection, except for the antrum which is merely excluded from the gastro-jejunostomy. Four such dogs received histamine-in-beeswax injections, and after 32 to 40 daily injections there were noted erosions, gastritis, and jejunitis, without ulceration. This indicates that the extended resection is satisfactory, but not as beneficial as the series three experiment. Also this tends to put discredit on Edkins' phenomenon and implies that the antrum is not important in ulcer genesis. This, however, is not necessarily true as will be shown in later investigations.

In series five of these early investigative researches, the Schmilinsky operation was employed. This operation combines not only antral excision but complete intragastric regurgitation of the alkaline secretions from the proximal loop into the stomach. The Schmilinsky operation enjoyed great popularity, especially on the continent, but has since fallen into discredit. The four dogs in the early experiment receiving histamine-in-beeswax all developed large jejunal ulcers after two, eight, 11 and 40 days, clearly indicating that this operation affords no greater protection than simple antral excision or gastro-jejunostomy. Indeed, it tends to hasten the development of ulceration.

The sixth series of experiments employed fundusectomy with gastro-jejunostomy. The four dogs treated in this manner followed with histamine-in-beeswax injections developed duodenal erosion, gastritis, etc. In this operation a moderate number of acid-secreting cells are removed, but apparently this is not sufficient when it is compared to the three-quarter resection.

The seventh series of dogs is similar to that of the sixth in that fundusectomy was performed, but without gastro-jejunostomy. Four such dogs receiving histamine-in-beeswax were sacrificed at 40 days, one showing a duodenal ulcer, two showing duodenal erosion and one a gastritis.

It is clear from the above series of experiments early in the investigative work on the duodenal

ulcer problem that only one operation, or modifications of it, regularly protected dogs from the maximum stimulus of histamine injections, that being the three-quarter gastric resection.

#### **Role of the Length of the Afferent Duodenojejunal Loop**

Because it was necessary, following these early experiments, to determine what refinements or what factors were operating in the three-quarter resection to produce such dramatic protection, further series of experiments were outlined. The following are the significant works. Since it had already been significantly demonstrated that three-quarter resection was necessary, it remained to be shown whether a long or short proximal, or afferent, duodenojejunal loop played a part in such protection.<sup>5</sup> Accordingly three series of dogs were all subjected to three-quarter resections. In Series I, however, there was employed a short proximal loop measuring 12 to 15 cm. from the inverted duodenum. Histamine administration was also employed in Series I. In Series II seven dogs were subjected to three-quarter resections and histamine-in-beeswax injections, in which there were employed long proximal loops measuring 27 to 78 cm. in length. In Series III four dogs received 75 per cent resections with long proximal loops without histamine-in-beeswax administration.

All 11 dogs in Series I demonstrated no ulceration after 40 daily injections of histamine-in-beeswax, indicating a clear protection to the maximum histamine stimulation. In Series II all of the seven dogs with three-quarter resections and long loops with histamine administration developed stomal ulcerations, three of which were free perforations with subsequent peritonitis; a 100 per cent incidence of stomal ulceration. In Series III where the long loop was employed with extensive gastric resection in which no histamine was given, there were two spontaneous occurrences of stomal ulceration, indicating that in the dog, in which spontaneous ulceration does not occur normally, spontaneous ulceration can be made to occur if a three-quarter resection with a long loop measuring 78 to 144 cm. is employed. Thus this early work definitely demonstrated that a short loop is far superior to the employment of the long loop, as a refinement to the standard three-quarter gastric resection. It has also been found that it is not necessary to excise a duodenal ulcer in the performance of a gastric resection.

#### **Criteria of Satisfactory Operation**

Because of the above investigations, as well as many other studies, it was possible then to establish certain criteria for the performance of a satisfactory operation for ulcer.<sup>6</sup> These may be listed as follows: (1) Seventy-five per cent resection with excision of the entire lesser curvature so that a sufficient amount



of acid-secreting mucosa is removed from the patient; (2) complete excision of the entire antral and pyloric mucosa; (3) employment of a short afferent or proximal loop. A short loop must be defined as one in which the anastomosis is made at or just proximal to the ligament of Treitz. Any anastomosis performed distal to that point must be considered a long loop. This implies that, to carry out a short loop anastomosis, the duodenum and jejunum must of necessity be brought up through the mesocolon in a retrocolic fashion for anastomosis. Conversely, any loop that is brought up in an antecolic fashion with the anastomosis anterior to the transverse colon must necessarily be called a long loop.

#### Attributes of the Short Proximal Loop

Much investigation has been carried out in which the various attributes of the short loop have been more clearly defined.<sup>7</sup> It was necessary to determine why a short loop was superior to the long loop. The most apparent virtue of a short loop is the matter of distance needed for the alkaline secretions to reach the anastomosis for neutralization of the acid. The shorter the distance the less time involved for neutralization to take place. In other words, the fire station is closer to the fire in the short loop anastomosis. Similarly, the transit time is much reduced with the short loop.

The second significant experimental contribution to efficacy of the short loop incorporated studies of the differential titratable alkalinity at various loops of the small intestine. There is a constant interchange of ions between the lumen of the bowel and the blood stream at all levels of the intestinal tract. The alkaline secretions from the pancreas and liver constantly undergo such changes as they progress down the intestine, and it has been shown that the titratable alkalinity decreases in proportion to the length of the bowel traversed. Therefore, the shorter loop would deliver increments of higher titratable alkalinity for neutralization of the acid at the anastomotic site.

The third important factor relating to the efficacy of the short loop is the secretin factor. It has been well shown in animals that if acid of gastric juice or tenth-normal hydrochloric acid is delivered to the mucosa of the small intestine, secretin is released.<sup>8</sup> This hormone from the mucosa is released to the blood stream which, in turn, stimulates the pancreas to secrete the alkaline pancreatic juice. It has been shown, in addition, that the various levels of the intestine vary in their sensitivity to acid in the release of secretin. In other words, the higher the small intestine, as far up as the duodenum and pylorus, the greater the sensitivity to acid, the greater the secretin released and the greater the pancreatic

secretion. Consequently, if a short loop anastomosis is employed where the acid from the stomach is deposited high in the small intestine, the greater will be the secretion of pancreatic juice for subsequent neutralization of the acid at the anastomosis.

The fourth attribute of the short loop anastomosis is the ill-defined factor of tissue susceptibility to ulceration. The lower reaches of the small intestine are apparently more susceptible to ulceration than are the more cephalad segments. Accordingly, a short loop gastric anastomosis with the small bowel would present less susceptibility to ulceration. This last factor may be a result of the first three named, yet it may indicate a specific immunity or susceptibility as the case may be. These four factors clearly demonstrate that a short loop is superior to a long loop anastomosis. It naturally follows that a Billroth I type of gastric resection, in which the divided duodenum at the pylorus is anastomosed end-to-end with the gastric pouch, would completely satisfy these requirements in that no loop at all would be proximal to the anastomosis. Technically, however, it is impossible to do a Billroth I operation on all patients with ulcer because of spatial difficulties in securing the gastric pouch in connection with the divided duodenum without tension. This can be done in the long, lanky type of individual but not in the broad-chested type of patient.

#### Clinical Investigations

The above criteria are adequately documented in the experimental literature and, indeed, are substantiated by experiences in clinical surgery. Perusal of the surgical literature concerning the results of operations in patients again establishes the above-named experimental observations. For instance, of 416 cases consecutively operated upon for peptic ulcer at the University of Minnesota in which the above criteria were rigidly adhered to, there occurred only three instances of recurrent stomal ulceration, an incidence of less than one per cent.<sup>9</sup> One additional patient has had recurrent bleeding without x-ray demonstration of ulceration. Inclusion of this case would still make for a recurrence rate of less than one per cent.

Because of the experimental background, it was felt that even these few recurrences should be explained. Accordingly, two of the three patients were re-explored. It was found in the first, whereas it was thought at the first operation that a three-quarter resection was carried out, this was not the case. Actually, less than a three-quarter resection had been performed, presumably because the greater portion of the stomach was tethered high underneath the diaphragm as one so often sees in the short, broad-chested individual in whom the stomach assumes a flat or transverse contour. At re-

operation in this patient further resection of the stomach was done. In the second case in which reoperation was carried out, it was found that the proximal loop was not as short as experience has shown to be necessary; this was corrected, as well as excision of slightly more gastric tissue. These recurrences, then, do not incriminate or discredit the criteria set up but only substantiate them. It is reasonable to assume that if the criteria were met faithfully in every case, the incidence of recurrence should be zero.

Further correlaries in human experience to experimental evidence are shown by the study of other reports in surgical literature. The incidence of recurrent ulceration varies in large series from seven to 15 per cent. Kiefer,<sup>10</sup> reporting the results of gastric resection at the Lahey Clinic, noted a recurrence rate of 11.4 per cent following gastric resection for duodenal ulcer, in cases where the long proximal loop was employed. Rienhoff<sup>11</sup> reported an incidence of recurrence of 11.3 per cent. It is likely that the addition of 20 to 40 cm. of jejunum to the proximal loop, when antecolic anastomoses are performed, probably accounts for the increased recurrence rate of stomal ulceration. Again a short loop must be defined as one in which the anastomosis is retrocolic and at or just proximal to the ligament of Treitz.

#### Operations on the Autonomic Nervous System

It is pertinent to discuss the operations performed on the autonomic nervous system for the treatment of peptic ulcers. Similar to the other procedures, these operations are designed primarily for the ablation of the acid factor, the particular distinction being that the cephalic phase of gastric secretion is considered to be the most important. Experimental investigation has been carried out for many years prior to their recent employment in patients. In his early physiologic studies on gastric secretion, Pavlov<sup>12</sup> showed that in the vagus denervated gastric pouch of a dog the cephalic phase is eliminated by the denervation, although the pouch still had the capacity to secrete acid in the gastric and intestinal phases of gastric secretion.

More recently vagus interruption has been shown physiologically to be important in the diminution of the night hypersecretion of acid so often seen in patients with duodenal ulcer.<sup>13</sup> Concerning the relation of the sympathetic nervous system to the peptic ulcer genesis, studies of significance show that coeliac ganglionectomy in dogs predisposes markedly to the histamine-provoked ulcer.<sup>14</sup> Dogs subjected to postganglionic resection will develop perforating ulcers after only two or three injections of histamine-in-beeswax. When vagotomy is employed in animals, there is demonstrated very little if any

protection against the histamine-stimulated ulcer,<sup>15</sup> as one might expect, but it is interesting to note that when the two operations are employed simultaneously, that is, postganglionic resection of the sympathetic supply to the stomach together with trans-thoracic vagotomy, a remarkable protection occurs against the histamine-provoked ulcer in dogs.<sup>16</sup> It is reasonable to assume that the side effects, such as gastric dilatation and stasis, attending complete denervation would create serious problems in patients.

Vagotomy, without complementary procedures, performed in many patients over the country has enjoyed at least a transient enthusiastic response, but it has been quite well shown, in the few years of its employment, that the increasing number of recurrences and the undesirable side effects preclude it from being the best operation for peptic ulceration. The use of small gastric resections with vagotomy or gastro-jejunostomy with vagotomy have not been employed for sufficient periods of time on enough patients to warrant prediction as to their true efficacy as a surgical treatment for ulcer.

In conclusion a sampling of the significant experimental investigations, as well as experience gained from patients operated upon for peptic ulcer, has been presented which establishes clearly certain criteria for satisfactory operation. It is reasonable to expect that if these criteria are faithfully met in every operation designed to diminish the acid factor in peptic ulceration, the recurrence of such ulceration would be an extremely unlikely possibility. These criteria include, primarily, a three-quarter resection of the stomach, excision of the entire lesser curvature and antrum with pyloric mucosa and, three, the employment of a short, afferent duodeno-jejunal loop with retrocolic anastomosis.

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# Inhibition by Antihistaminic Compounds of Growth of Pathogenic Fungi: The Effect of Chlor-Trimeton Maleate in Vitro

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Pyribenzamine ointment was observed clinically to be beneficial in cases of tinea pedis, Carson and Campbell<sup>1</sup> reported, so these investigators tested the compound and found it to be effectively inhibitory in vitro to the growth of various fungi pathogenic for man. Following their studies, we chose Chlor-trimeton maleate\*\* [1-(p-chlorophenyl)-1-(2-pyridyl)-3-N, N-dimethylpropylamine maleate] for similar tests. Clinically this drug given by mouth has appeared to us to be especially satisfactory in patients whose allergic symptoms were of a sort wherein antihistaminic therapy was indicated.

Tubes of Mycophil Broth<sup>R</sup> (Baltimore Biological Laboratory) containing Chlor-trimeton maleate in concentrations of 0.1, 0.25, 0.5, 0.75, and 1.0 mg/ml at pH 6 and at pH 8 were inoculated with two drops of a saline suspension of *Candida albicans*, *Microsporum lanosum*, *Trichophyton rubrum*, and *Trichophyton mentographytes*. Controls were run with

inoculations into plain Mycophil Broth<sup>R</sup> at pH 6. All strains were recently isolated from patients seen in the practice of dermatology. Cultures were examined at 24-hour intervals for 12 days.

Results indicate that Chlor-trimeton maleate at least inhibits the growth in vitro of the four fungi tested. Temporary inhibitory action for 24 hours was obtained with all four fungi in a concentration of 0.25 mg/ml at pH 8. Growth of *Microsporum lanosum* and *Trichophyton rubrum* was prevented in a concentration of 0.5 mg/ml at pH 8. No growth of the four fungi tested occurred in concentrations of 0.75 mg/ml at pH 8. The organisms grew better at pH 6 than at pH 8 in plain Mycophil Broth<sup>R</sup>. Chlor-trimeton maleate did not prevent growth of any of these fungi in Mycophil Broth at pH 6, even in a concentration of 1.0 mg/ml.

We are now testing in vivo alkaline ointments containing 0.25 per cent Chlor-trimeton maleate. Clinical results are as yet still being collected.

## Reference

1. Carson, Layne E., and Campbell, Charlotte C.: The Inhibitory Effect of Three Antihistaminic Compounds on the Growth of Fungi Pathogenic for Man, *Science* 103: 689 (June 23) 1950.

\*From the Department of Dermatology and Syphilology, University of Kansas Medical Center.

\*\*Supplied by the Schering Corporation, Bloomfield, New Jersey.

# The Treatment of Congestive Failure

E. Grey Dimond, M.D.

Kansas City, Kansas

The treatment of congestive heart failure has changed during the past five years. The majority of the changes have been for the better, allowing liberal fluid intake, reducing sodium intake, and freer use of mercurial diuretics, but the general adoption of such ideas has tended to result in the establishment of treatment patterns or systems. The average patient can be compensated by such measures; however, there are others who cannot. The approach of digitalization by the large, single oral dose, of the daily administration of mercurials, of the strict curbing of sodium are measures which are effective in many, but more general awareness of the limitations is needed.

## 1. RAPID DIGITALIZATION.

It is the rare patient who needs his total digitalis effect within six hours. The routine use of 1.2 mgm. of digitoxin as a single initial dose is more dramatic than therapeutic. The choice of digitalis preparation is unimportant; remember that the multitude of products available vary in *speed* of action, not in *method* of action. Among many physicians there has been a recession from digitoxin to the dried leaf. This has been occasioned by the too enthusiastic use of digitoxin, not because digitoxin has any inherent toxicity not also present in the dried leaf.

The term "digitalize" means to give enough of the drug "to obtain the desired therapeutic effect or until toxic symptoms occur." The desired therapeutic effect is compensation of the failing heart, and any arbitrary rule as to what is the necessary amount should not keep the physician from giving less or more. Consider the frequently quoted system of 1.2 mgm. of digitoxin as but a warning that you have given a fair quantity of the drug, but unless you have achieved the desired effect (beginning compensation), continue giving the drug until the effect is reached or until toxic symptoms occur. For example, in the average case a base dose of .6 mgm. of digitoxin by mouth may be given, then every six hours give .2 mgm. additional dose. Continue this additional .2 mgm. until you reach the desired effect or, if toxic symptoms occur, stop the medication until the symptoms pass, and then place on a daily dose. This technique permits you to explore cautiously the given patient's tolerance, and if you exceed this tolerance you will do so by only .2 mgm. of digitoxin. The range of requirement for therapeutic effect can vary from .8 to 3.0 mgm. of digitoxin, for example.

This logically leads to the question, "What is the daily maintenance dose?" The answer is, "Enough to maintain digitalization." Such an answer is not meant to beg the question but is given to indicate that again there is no rule to govern the daily requirement. For the majority it is probably .15 mgm. daily, but there are many others who will require .1, or .2, or .3 mgm. daily. The technique of *re-digitalization* is little used but should have wider application. For example, if a patient has been digitalized and then placed on a daily ration of .15 mgm., it is a good therapeutic measure, after two or three weeks, to increase the daily amount in an effort to explore the margin of toxicity. If doubling the daily ration to .3 mgm. for four or five days does not result in toxic symptoms, it is apparent that the original .15 mgm. allotment was inadequate. Such a re-evaluation may be done periodically.

## 2. MARKED SODIUM RESTRICTION

The restriction of sodium is important, but remember that the maintenance of nutrition is vital. A rigid enthusiasm for restriction will not infrequently result in a disagreeable patient, who complains bitterly of the tasteless diet, refuses his tray, and is unable to maintain his nutrition. A moderate restriction of four to five grams of NaCl a day will allow a fairly palatable diet. It is appreciated that occasional cases will need further restriction, and when necessary the intake can be reduced to 200 mgm. of sodium daily; refractory failure warrants intensive restriction.

However, it should be remembered that the mercurial diuretics offer an excellent method of ridding the body of its sodium. The urine of an individual, following mercurial diuresis, will not only be increased in volume but also in the percentage composition of sodium. The mercurials increase the renal loss of sodium per unit of renal water. This fact should be more widely utilized in permitting a greater latitude in regard to the dietary sodium. In an elderly individual, for whom eating represents one of the scant pleasures remaining, it seems wise to allow a palatable amount of salt with the food, and to counteract its edema-formation tendency by more frequent mercurials.

The above statement must be qualified by reference to the dangers of over-enthusiastic diuresis. With the enthusiastic adoption of marked sodium restriction and intensive mercurial diuresis, physicians have been seeing a phenomenon which was formerly limited to such states as Addison's disease



and post-operative patients. This state is characterized by weakness, loss of appetite, leg cramping, loss of interest, and somnolence. These are the symptoms of salt-water depletion. If the diuresis is carried too far, kidney failure and irreversible uremia may occur. When such an event is initiated, the physician must make an about face and give sodium chloride by mouth or vein. Such problems can be avoided if the dosage of the mercurial is kept small and if the patient is questioned following each diuresis for the symptoms above described. The intramuscular administration of .5 cc. of mercurhydrin, for example, will cause a moderate weight loss of two to three pounds, which seems far more physiological than an eight to 10 pound flood, followed by weakness and leg cramps. The patient can be taught to follow his weight at home and to give his own intramuscular or subcutaneous mercurial, when he notes a three or four pound weight increase.

### 3. BED REST.

Rest for heart disease is probably the oldest and most fundamental treatment. However, rest for a patient with orthopnea and several pounds of fluid in his legs is achieved with the patient straight up in a chair, and not recumbent. The abuse of bed

rest has been decried by many others, and the observation by the patient that the swelling of his legs disappears when he is in bed is still further warning that edema fluid follows the pull of gravity and the flanks and lung bases are the most recumbent areas when we sleep.

Restriction to bed, with the resultant inactivity of the lower limbs, plus the passive congestion in the veins, can quickly and silently result in thrombosis in the calf veins. The often fatal sequel, pulmonary embolism, probably accounts for the fatal outcome of more patients with congestive failure than does the original offender, the heart. Not infrequently, residual ankle edema will persist until the patient is allowed to walk and then his leg muscles will mobilize the stubborn fluid.

### Summary

The treatment of congestive failure has reached the unfortunate state in which the method has become patterned. The doctrine of rigid sodium restriction, intensive mercurial diuresis, and fixed digitoxin program has resulted in excellent therapeutic results for many. However, for many others it has resulted in unpalatable diets, marked salt-water depletion, and unsatisfactory digitalization.

## Kansas Medical Society Annual Meetings

1951

May 14-17

TOPEKA, KANSAS

1952

May 5-8

KANSAS CITY, KANSAS

## PRESIDENT'S PAGE

Dear Doctor:

The third annual Kansas Medical Society day was held at the Kansas University Medical School on March 5. The society takes over for the day and presents a diversified program to the juniors and seniors on subjects which we think will be of special interest to them.

The program this year consisted of:

Address of Welcome—Franklin D. Murphy, M.D., Dean of the Kansas University Medical School.

Introduction—F. R. Croson, M.D., President, K.M.S.

Prepayment Insurance in Medicine—W. F. Bernstorff, M.D., First Vice President, K.M.S.

Continuing Education of a Physician—H. H. Jones, M.D., Chairman, Committee on Graduate Education, K.M.S.

General Practice Today—George Burket, M.D., Chairman, Committee on Education, Kansas Academy of General Practice, and Mr. Mac Cahal, Executive Secretary, American Academy of General Practice.

The Physician's Public Relations—J. H. A. Peck, M.D., Past President, K.M.S.

The Problem of Socialism—C. H. Benage, M.D., President-Elect, K.M.S.

The Medical Board—O. W. Davidson, M.D., Secretary, Board of Medical Registration and Examination.

The County Medical Society in Action—F. D. Taylor, M.D., Secretary, Clay County Medical Society.

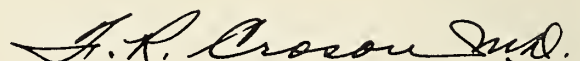
The Kansas Medical Society and Current Legislation—F. R. Croson, M.D., President, K.M.S.

Following the day's program a social hour and banquet were held at the Continental Hotel for all juniors and seniors and their escorts. Mr. Bill Vaughan of the Kansas City Star was the banquet speaker. He presented numerous topics in a humorous manner and then gave a serious, sincere and timely discourse on "Socialism and its Undesirable Effects upon Medicine."

It is impossible to ascertain the amount of good these programs accomplish. Certainly the students love it all and their sincerity can well be judged by the numerous intelligent questions they ask. The men who have taken part in the programs during the past three years are very enthusiastic about this contact. It seems to bind the school and the individual students much closer to the Society and one cannot help but feel the mutual good will and fellowship which are ever present. Let us make these programs permanent and let us make them better and better.

I extend my personal thanks to everyone who appeared upon the program or who contributed in any way to make the day the success which it was.

Sincerely,

A handwritten signature in cursive script, reading "F. R. Croson M.D.", written in dark ink.



## EDITORIAL COMMENT

### Process of Evolution

In 1947 your Editorial Board established what at that time was hoped to be the first of an annual and permanent Kansas University issue of the Journal.

In reality, the first issue came about by chance. As we sat in the monthly Board meeting in February, we found that the only scientific papers we had were from Kansas University sources.

Now, in 1951, we are publishing this, our fifth annual issue.

At that meeting when the first issue was born, several things were discussed. First, that all factors pertaining to the science and art of the practice of medicine in this state or in any other state should revolve around the medical school. Second, that the scientific material that might be prepared from original and clinical research within the state should be published in our own Journal and not be scattered hither and yon, thereby helping to elevate Kansas medicine to its correct level in this country and abroad. Third, that it might be a definite stimulus to the young men and women who have availed themselves of the opportunity of studying medicine in our university, and at a great expense to our tax-paying citizens, realizing that Kansas medicine is progressive, to remain in our state and help carry this prospected goal nearer to the ideal. Fourth, that it would stimulate the profession of the state to better clinical observations and better medical writing because there would be more competition.

In 1949, when Oscar Davidson was our president, the first Kansas Medical Day was originated and held at the medical school in Kansas City. This is the one day in the year that the entire student body of the medical school gets together. It is particularly fitting that this day falls in March and coincides with the month when the Kansas University issue of the Journal is published. On this day the students are entertained by the Kansas Medical Society.

At the Kansas Medical Day in 1950, when Haddon Peck was our president, the Society was so impressed with the interest demonstrated by the student body that they established at the university a student loan fund of \$10,000. The only stipulation to the management of this fund was that no one student could borrow more than \$500.

During the past two or three years, under the leadership of Haddon Peck and Franklin Murphy, the Kansas Rural Health Plan was launched, and successfully so. There are many rural areas that have

up to date medical clinics, built by the communities and manned by young physicians. These communities are now receiving medical care of a high plane without having to go outside those communities to get it.

Glen Shepherd of the university is one of our associate editors. It is through his efforts that this fifth K.U. issue of the Journal goes to press. He brings to our attention that the contributors from the university are now desirous of having their material printed in our Journal and are not looking elsewhere to have it printed.

And as we sit back and muse a little, we can hope at least that the first annual Kansas University issue of the Journal, born of necessity and by chance, may have played a very small part in the cementing of professional and individual relationships so that these and other worthwhile things have come to pass.

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### Doctors, Duty, and Dedication

Under the above caption Dr. Aldrich C. Crowe, president of the Medical Society of New Jersey, answered a physician who criticized action taken by the state's committee on physician resources. Although his opinions may not be shared by all members of the medical profession, his editorial provokes thought. A portion of the editorial is reprinted below.

"The constitutionality of Public Law 779 (the 'doctor-draft' law) is something we cannot adjudicate. So long as it remains on the statute books, it is the law of the land and we must obey it. Of course it *is* discriminatory. We doctors enjoy considerable discrimination in our favor—any honest physician can list these for himself. Are we to accept smugly all these perquisites but cry 'discrimination' when a cognate duty is imposed? We ask our unhappy correspondent just how *he* would obtain medical officers if too few volunteered. Would he recall those doctors who already had had foreign service, and whose commissions perforce had not yet expired? Or just let the soldiers go without medical attention? If he can think of a fairer way of obtaining the needed medical officers, we would welcome hearing about it.

"Must doctors' children be deprived of their fathers because the latter are physicians? Sometimes, yes. If a physician is enjoying the companionship of his children one evening and a call comes that there has been a wreck at the railway yards, he will have to abandon the children and go on duty. The

clerk across the street can continue to wallow in domesticity. If a man is unwilling to have his private life disrupted by duty, then he should never become a doctor. Ninety-four per cent of army and navy personnel are *not* physicians. They too have children. More than 96 per cent of those in combat are *not* physicians. Their children stand a good chance of permanently losing their fathers. Perhaps our correspondent can never understand this, but whoever takes the Hippocratic oath dedicates himself to public service. Just a sweet sentiment is it? Well, when the chips are down, it leaps into life as a tough reality. We expect a fireman to accept interruption of private life as part of a duty. Are doctors less courageous than firemen? At considerable cost, society educated the doctor. No matter how much tuition fee you paid, you got a bargain. Society made up the deficit. In return society expects you to be on call for emergencies. Such is the covenant we make when we become doctors.

"The fear that regimentation will lead to socialization is the strangest charge of the lot. We are faced with an emergency in which survival rather than victory is the immediate, urgent goal. We still have a free system of medical practice. If through this system we can furnish doctors so desperately needed, we have a strong argument in support of our system. But the people simply will not stand being deprived of medical care for troops if under our individualized system every physician can decide to stay home when the going gets tough. This is our chance to show that under a free system we can police our own profession."

### Suicide

Although suicide would not likely be classified as a topic of more than casual interest to physicians, the prevention of that great tragedy does lie within the field of preventive medicine. A study of the subject was made recently by Dr. Carl L. Kline, a diplomate of the American Board of Psychiatry and Neurology, and was reported in the Wisconsin Medical Journal.

In presenting general facts Dr. Kline says that suicide stands ninth among the causes of death and accounts for more fatalities than the five most common communicable diseases, in spite of the fact that many actual suicides are not reported as such. More than half of all suicides occur in persons 45 years of age or older, and three times as many men as women destroy themselves. The suicide rate increases with advancing years, and beginning with adolescence each decade shows a steady and consistent rise.

A discussion of current misconceptions includes mention of the fact that one who commits suicide

must be insane, which Dr. Kline has found is not the case. He has also found it untrue that suicide is restricted to depressed patients, that those who talk of taking their own lives never do so, that there is an increase in such deaths in periods of economic depression.

The author compares suicide to cancer and refers to it as a condition about which a great deal is known but the cause of which is still being sought. He believes that all physicians should be alert to factors in the personality of patients who are potentially suicidal so that psychiatric consultation may be instituted to prevent tragedy.

The largest group of patients who are potentially suicide victims is composed of persons who look and feel depressed and have additional symptoms such as sleeplessness, hypochondriasis, feelings of guilt, feelings of unworthiness and failure, loss of weight, inability to work efficiently, inability to concentrate, memory difficulty or carelessness about appearance.

Next are those with an elevated mood, excess energy, overtalkativeness and playfulness, patients who may be on the upswing from a period of depression or in a mental state preceding such a period. Other groups include persons who show much dependence upon others, those who indulge excessively in oral gratifications, victims of chronic illness who display no will to live, patients with strong feelings of guilt and a need for punishment who insist on satisfying such needs through surgical procedures. In the latter group are "surgical shoppers" who, by means of unconscious mechanisms, develop symptoms which demand surgical intervention.

Suicide should be viewed as a reaction of a developmental nature rather than as an isolated incident in a lifetime, according to Dr. Kline. Generally speaking such patients have always had difficulty in dealing with hostile impulses and aggressivity, and resort to suicide when they turn these hostile, aggressive impulses upon themselves. The medical man and the psychiatrist, by working together, can rehabilitate many troubled patients and avert a significant number of tragedies.

Appointment and assignment of women physicians, dentists, and allied specialists to active duty as reserve officers has been authorized by the Department of the Army. They will be appointed to duty under regulations currently providing for the commissioning of male officers and will be given opportunities for clinical practice. With the exception of forward medical installations in combat zones, they will be eligible for service in every type of military medical facility.



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## Case Report from the University of Kansas Medical Center

## Severe Pulmonary Edema in an Ambulatory Patient

## CLINICAL PATHOLOGICAL CONFERENCE

Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, roentgenology, and the junior and senior classes of medical students.

## Case Presentation

J. R., a 49-year-old white male, was admitted to the Kansas University Medical Center on October 14, 1950, and expired the same day.

Chief complaints were "tightness of the chest, shortness of breath, and hemoptysis of three days duration. Shortness of breath was first noted three days previously. At that time he developed tightness of the chest and a productive cough of bright red blood. On the evening of October 13, 1950, the patient was taken to the KUMC emergency room where he was examined and was given penicillin intramuscularly. The following day he was seen in the outpatient clinic. Because of the progression of symptoms, he was admitted to the hospital.

Past history: His wife stated that he had been short of breath for approximately one year and that during recent months he had seemed to be losing weight. There was no history of rheumatic fever, growing pains, or other significant symptoms.

Family history: Father died at 83 of a stroke; mother died at 73 of pneumonia. There was no family history of diabetes, heart disease, tuberculosis, or carcinoma.

System review: No history of substernal pain could be elicited on admission. Ankle edema had not been noted. The gastrointestinal, genitourinary, and neurological systems were entirely negative. The patient drank "six to eight shots of whiskey daily" and three to four beers daily. There had been no recent weight loss.

Physical examination revealed a well developed, slightly obese white male of approximately 49 years of age who appeared acutely ill. The blood pressure was 135/80 in the left arm, temperature 103°F., pulse 120, respiration 26, height five feet four inches, weight 165 pounds. The pupils were round and equal, reacting to light and accommodation. The fundi revealed nothing unusual. Extraocular movements were normal. The ears, nose, and throat were essentially negative. There was no cervical adenopathy. The thyroid gland was not palpable. There were coarse, crackling rales throughout both lungs. The percussion note at the apices was dull, the vocal fremitus was increased bilaterally. The heart was not enlarged. There was systolic murmur at the apex. The P.M.I. was in the fifth interspace at the

midclavicular line. The heart sounds were clear and regular. There was no axillary or inguinal lymphadenopathy. No abdominal masses could be palpated. The lower extremities and the neurological examinations were negative.

Laboratory examination: Urine was acid in reaction with specific gravity of 1.034, a faint trace of albumin, sugar negative, and microscopic negative. Complete blood count at noon revealed rbc., 4,000,000; wbc., 8,950; hemoglobin 77 per cent; polys 88, lymphocytes 10, monocytes two.

Complete blood count at 8:00 p.m. on the same day showed rbc., 5,020,000; wbc., 37,550; hemoglobin 84 per cent; polys 86, 76 filamented and 10 non-filamented; lymphocytes 13; monocytes one.

The blood N.P.N. was 63.5 mgm. per cent, sugar 160 mgm., chloride 68 milli-equivalents, CO<sub>2</sub> 16.8 meq. Sputum culture was negative for pathogens.

Hospital course: Shortly after admission the patient seemed to improve slightly, respiration and pulse slowing on bed rest. Penicillin, 200,000 units every three hours, was started on admission. At 6:00 p.m. the patient complained of increasing dyspnea. Moist rales were heard throughout the lungs. Oxygen by nasal catheter was started and 0.6 mg. of purodigin was given. Dyspnea became progressively worse. Digitalization was completed at 9:00 p.m. Aminophylline and atropine seemed to relieve the respiratory distress and the chest cleared slightly. However, the patient expired suddenly at 9:49 p.m., death being preceded by a convulsion.

Dr. Delp: Are there any questions concerning this patient?

Question: Were there any bacteriological studies done other than sputum cultures that were negative for pathogens?

Dr. Stockard (Medicine Resident): There were no organisms found in nose and throat culture which was negative after 10 days.

Question: I would like to know more about the sputum. Did he have lots of sputum?

Dr. Stockard: We had an emesis basin by the side of his bed and it was filled twice with quantities of watery bloody sputum.

Dr. Dimond (Cardiovascular Section): (First EKG was taken at 2:30 p.m.) The limb lead RST segments are depressed. The diphasic, flattened inverted T waves are abnormal findings. Axis deviation is normal. There are no changes to suggest pulmonary infarction.



# MEAT...and the ANABOLIC PROCESSES

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Only in the past two decades has been established the full significance of adequate protein nutrition for supporting the anabolic processes of the organism in physiologic stress.<sup>1</sup> The healing of all types of wounds, repair of regenerating parenchymal organs, detoxification, maintenance of normal fluid balance between the various compartments of the body, growth of replacement tissue in extensive burns, rapid manufacture of antibodies, normal phagocytic response, upkeep of the erythrocyte mass and plasma protein, and support of the enzyme systems are but some of the physiologic processes dependent upon the state of protein nutrition in the patient.

Due to the almost complete absorption of the digestion products of meat protein and its excellent indispensable amino acid balance, the protein of meat participates efficiently in the synthesis of new tissue protein. On the other hand, studies in liver regeneration after partial hepatectomy have shown that incomplete proteins of vegetable origin, fed alone, do not increase the protein of the impaired liver any better than a diet containing no protein.<sup>2</sup>

The high content of biologically complete protein, however, is not the only reason for including liberal amounts of meat in the dietaries of patients requiring a high protein intake. Meat is also an important rich source of iron and valuable amounts of essential vitamins—thiamine, riboflavin, and niacin, and the newly discovered vitamin B<sub>12</sub> which, among its several functions, promotes the most efficient utilization of protein.

(1) Ravdin, I. S., and Gimbel, N. S.: Protein Metabolism in Surgical Patients, J.A.M.A., 144:979 (Nov. 18) 1950.

(2) Vars, H. M., and Gurd, F. N.: Role of Dietary Protein in Experimental Liver Regeneration in Nitrogen Balance Study, Am. J. Physiol., 151:391 (Dec.) 1947.

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A distinct depression of the RST segment is present in the chest leads. The same marked depression occurs all the way across. This is just the opposite of what you would expect in a man who is having an acute myocardial infarction. It is suggestive of the type of findings you see in a subendocardial ischemia or subendocardial anoxia.

(Second EKG was taken at 6:30 p.m.) The patient had not been completely digitalized at this time. There are several things that have changed. We see extrasystoles now, ventricular in type. Also a big S wave has appeared in lead I which was not there previously, suggestive, but not diagnostic, of strain on the right ventricle. The same finding could be due to a change in heart position. The rate has increased from 120 to approximately 150-160. The RST segment depressions have increased considerably. I believe the QRS complexes are wider.

Dr. Tice (Roentgenology): These films were made on the day of admission. They are characterized by an extensive soft granular type of infiltration which seems to run out from the hilar areas on both sides. The apices are relatively clear. The heart is not large.

The differential diagnosis to my mind consisted first of decompensation. This was unlikely because of the character of the infiltration and because of the size of the heart. Secondly, the question of tuberculous pneumonia was raised in my mind. I discounted it because no primary lesion was apparent. Azotemia, associated with a high NPN sometimes gives a dense hilar infiltration. I finally settled on pneumonia of unknown etiology.

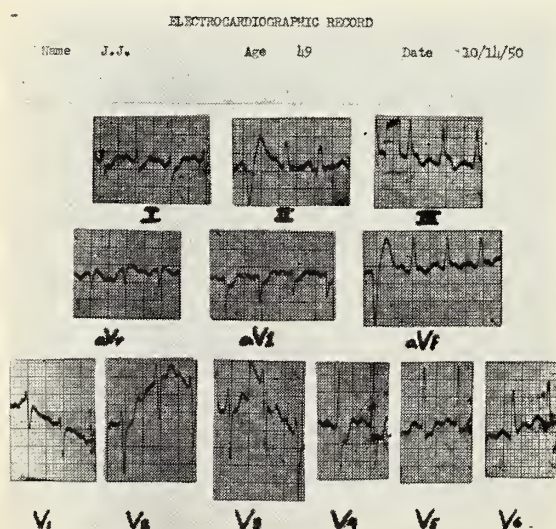


Figure 1. Interpretation: The significant findings are in the RST segment in leads I and 3 being reciprocally changed. These changes are very suggestive that the patient was having some cause for pulmonary hypertension with resultant right ventricular ischemia. This type of pattern is frequently seen in pulmonary embolism. There are frequent ventricular premature contractions present. Sinus tachycardia is the basic rhythm.

### Differential Diagnosis

Mr. Dale Smith (Student:) When I saw this patient in the out-patient department, he was obviously acutely ill. He was dyspneic and was spitting up blood. With coughing, he produced a large amount of rather watery, frothy, and very bloody sputum. The history indicated the presence of chest pain from the first day of illness. He had chest pain during the day at work, continuing after he returned home that evening. That was when he started spitting up blood. On this basis, I thought of a pulmonary embolism.

The chief finding was hemoptysis. In a differential diagnosis, one has to consider all the causes of hemoptysis. The main causes considered are tuberculous pneumonia, mitral stenosis, pneumonia, lung abscess, pulmonary infarction, carcinoma either primary or secondary, bronchiectasis, as well as aortic or pulmonary aneurysm rupturing into the lung. There are other causes particularly higher in the respiratory tree such as in the larynx, but they don't produce this type of hemoptysis.

On an historical basis this man had been sick for three days and had hemoptysis for three days before he sought medical help. His stoical disposition creates the possibility of more severe chest pain than was supposed. There is a history of considerable alcohol consumption. Chronic alcoholism might predispose to pneumonia. The major physical findings are in the lungs, consisting of crackling rales, increased fremitus, and dullness to percussion.

We consider now the various factors in the differential diagnosis. Acute tuberculous pneumonia can be easily mistaken for pneumococcal pneumonia because both may present an acute onset of chills, prostration, aching chest, fever, rapid pulse, cyanosis, and hemoptysis. Other causes of pneumonia are influenza virus, primary atypical pneumonia, Friedlander's bacillus, and streptococcal pneumonia. Friedlander's bacillus causes about one per cent of pneumonias.

Bronchiectasis generally gives a characteristic history. However, an acute onset with hemoptysis could occur. Such a rapid course as this patient showed ruled out bronchiectasis.

Pulmonary infarction is a possibility, although there is no demonstrated site of origin for the embolus.

A lung abscess probably wouldn't present such an acute picture as this. A tumor of the lung, either primary or secondary, can be insidious initially and then have an acute onset with hemoptysis. There is no x-ray evidence of such lesion in the lungs.

I am left with two diagnoses: 1. A pulmonary infarct, even though there is no obvious source. 2. Pneumonia. Pneumococcal pneumonia does not usually give such a picture of hemoptysis. Primary



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atypical pneumonia is not as severe a disease. It is usually benign. It is rarely this virulent. Friedlander's bacillus pneumonia is frequently mistaken for pulmonary embolism.

I am going to say that he had a pneumonia, possibly Friedlander's. Otherwise, I think it was a pulmonary infarction.

#### Clinical Discussion

Dr. Delp: Dr. Allen, I am wondering what your explanation is for these pulmonary findings?

Dr. Max Allen (Medicine): A fatal pneumonia with a white blood count of 8,000 within 12 hours before death and with no organisms in the sputum seems like a very queer disease to me. I think if it is that, it must be a virus pneumonia. Pneumonia can be fulminating and even fatal, especially if imposed on pre-existing cardiovascular disease with associated pulmonary edema. Can we believe that blood count of 8,000 at noon on the day of death and 35,000 eight hours later? It is difficult to accept.

It might make me think of a virulent bacterial infection superimposed upon a less severe virus infection.

From some of the changes in the electrocardiogram and the description of chest discomfort it would appear that the heart was prominently involved in the terminal event and probably pulmonary edema existed at the time of death.

Dr. Delp: Dr. Tice, do you care to make any further suggestions?

Dr. Tice: I would like to go away out on a limb. I was impressed by this copious sputum. There is a condition known as pulmonary adenomatosis that is characterized by very copious sputum. I think the patient was ill for a longer period than the history indicates. This man was ill, according to his wife, since about the 10th of October. The condition raises the question as to whether it was a granulomatous or a malignant lesion.

Dr. Delp: I think Dr. Tice's point is well taken but whether or not it applies in this case we will learn later.

Dr. Peete (Medicine): I wonder if this patient really didn't have an overwhelming type of lobar pneumonia that was somewhat attenuated by penicillin; and the final event, the cause of death, nephritis.

Question: I would like to ask Dr. Dimond if there is any suggestion of a myocardial infarct from the changes in the electrocardiogram.

Dr. Dimond: Based on the appearance of the RST segment and the presence of the T wave, a myocardial infarction was not suggested.

Dr. Delp: In seeing this patient I was impressed by one feature. It was the most typical, classical pulmonary edema I have ever seen. It was a severe pul-

monary edema, and simply because of the volume of the sputum it was confusing.

The next significant thing to be learned about the patient was the history of recurrent pain in the chest during the past year.

The next important feature is the history of episodic shortness of breath occurring in paroxysms almost every night. All of these should be important observations when coupled with electrocardiographic findings pointing to the heart as a principal focus for the disease state. I don't think we can say this man did not have a pulmonary disease in which toxemia was sufficiently great to have produced pulmonary edema. One other situation in which such massive pulmonary edema does occur is in the individual who has had a high grade mitral stenosis for a long period of time.

I feel that the primary disease was probably in the heart. And, obviously, we have one suggestion for painful types of heart disease. Now, may we hear what the pathologists found.

#### Pathology Report

Dr. Spicer (Pathology Resident): On general inspection the body was that of a well-nourished, obese, 49-year-old white male. The peritoneal cavity showed no fluid nor other positive findings.

The thoracic cavity contained 100 cc. of clear straw colored fluid in the right pleural space and 200 cc. of clear straw colored fluid in the left pleural space. The pleural surfaces were smooth, moist and glistening. There were adhesions at the bases and the organs had a normal relationship.

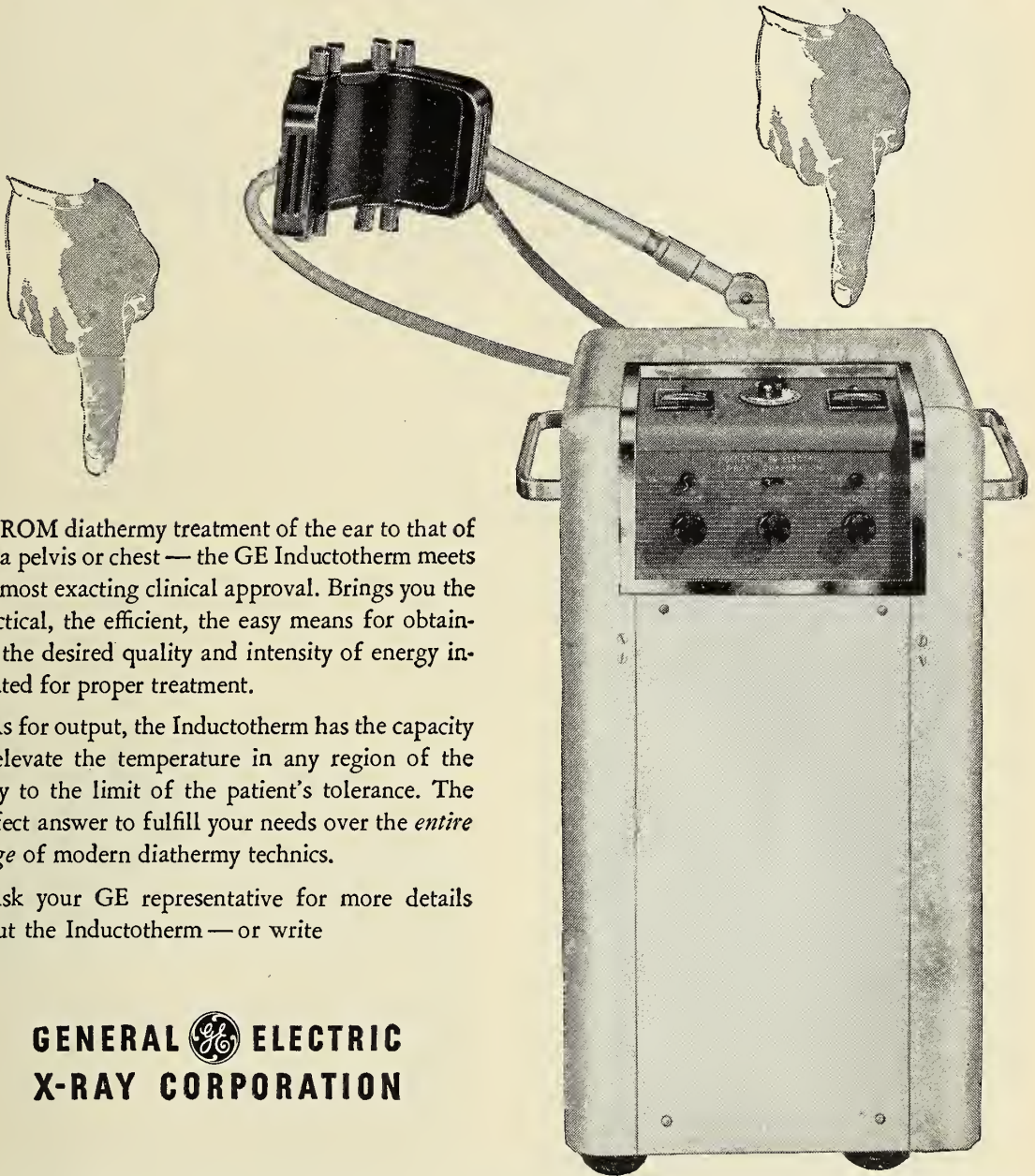
The pericardial sac contained 25 cc. of clear fluid and the surfaces were smooth, moist, and glistening. There were no adhesions.

The heart weighed 400 grams, was conical in shape. There were a few areas of softening involving the lateral wall of the left ventricle and the apex. The tricuspid valve measured 14 cm., the pulmonary eight cm., the mitral 11 cm., and the aortic valve 8.5 cm. Both coronary arteries showed atheromata about one cm. from the ostia. There was a rather large area of necrosis under the apex of the heart involving the lateral wall of the left ventricle at the septum. The left ventricle measured 18 mm. in thickness and the right ventricle five mm. The heart appeared to be definitely dilated.

The right lung weighed 800 grams and the left lung weighed 600 grams. There were some adhesions at both bases bilaterally. The lungs were spongy in consistency. They showed considerable edema and exuded a large amount of fluid on inspection. There was congestion throughout both the lungs and a mucosanguineous exudate in the bronchi. The vessels appeared to be patent and normal.



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There were some petechial hemorrhages in the stomach and about 150 cc. of greenish fluid. The rugae were not distinct and the mucosa was intact. There were some petechial hemorrhages throughout the duodenum.

The provisional gross anatomical diagnosis: coronary atheromata, large apical and lateral myocardial infarction, cardiac dilatation, chronic passive congestion of the lungs and liver.

Dr. Wyatt (Pathology Resident): Of course the main findings are in the heart. The lung, however, is affected on microscopic examination. There was pulmonary edema present and much early passive congestion also. Heart failure cells in the alveoli were of giant proportions. This suggests repeated bouts of pulmonary difficulty because of the large number of heart failure cells. There were also a few clusters of smaller leukocytes which were mostly polys. This was interpreted as being an early hypostatic bronchial pneumonia. It was not extensive.

Particularly striking were the degenerative myocardial muscle fibers. These lesions were present for a month or longer. There was considerable fragmentation throughout the cardiac musculature as well as an organizing area of infarction.

There was considerable endocardial reaction microscopically which was not so evident grossly. This is the same type of reaction as seen through the myocardium. There was considerable fibrosis, and particularly striking were the number and types of histiocytic cells. This lesion extended down into the myocardium, forming somewhat of a syncytial appearance and replacing myocardial fibers.

Some of the lesions were probably of two to three weeks duration as shown by organization with numerous capillaries.

The cause of death and the events in which they occurred would be gross coronary occlusion with organizing myocardial infarction of the left anterior ventricle. Parenchymatous myocarditis, pulmonary edema, and passive congestion with acute dilatation of the heart were present. This heart also showed changes indicating possibly an earlier lesion.

Dr. Wahl (Pathology): It is obvious that this patient died from cardiac failure with a very severe pulmonary edema.

Dr. Dimond: I should like to ask the pathologist whether the infarct ran through the muscle. Was it from epicardium to endocardium? What surface was affected?

Dr. Wahl: It affected the endocardium more than the epicardium.

Dr. Dimond: The electrocardiogram indicated that the pathology was confined to the endocardium. It is said that 85 per cent of primary infarctions can be shown by EKGs. And that percentage is increased by taking leads at different areas across the chest. The accuracy of the electrocardiogram is directly proportional to the experience of the interpreter.

Regarding the care of pulmonary edema, one must first agree on the cause of pulmonary edema. Bed-side clinicians for years have maintained that pulmonary edema is the same thing as left ventricular failure or cardiac asthma. And by saying left ventricular weakness or failure they infer that the man has pulmonary edema because the left heart has been unable to empty the lungs, the capillaries are therefore under an increased pressure and there is transudation of fluid with resultant edema.

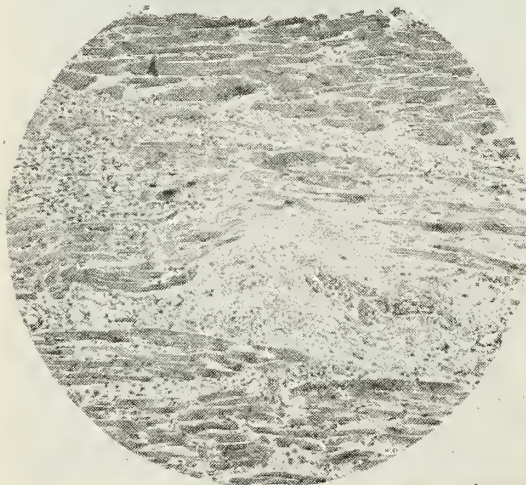


Figure 2-A. A section of myocardium showing fibrosis, perivascular inflammatory reaction, and diffuse inflammatory infiltrate of polys, lymphs, and histiocytes. x 60.

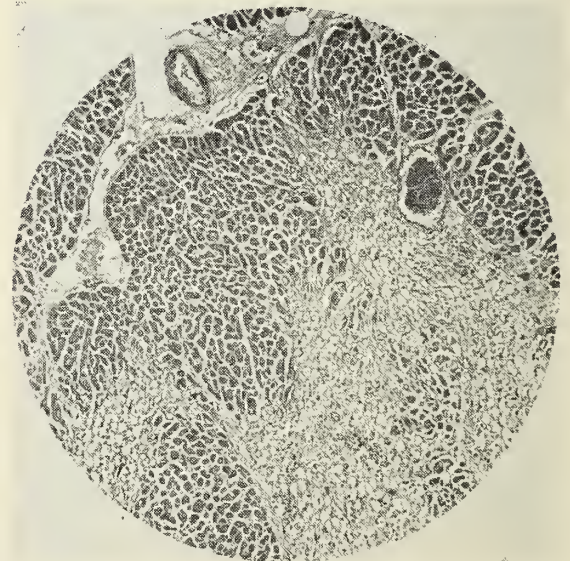
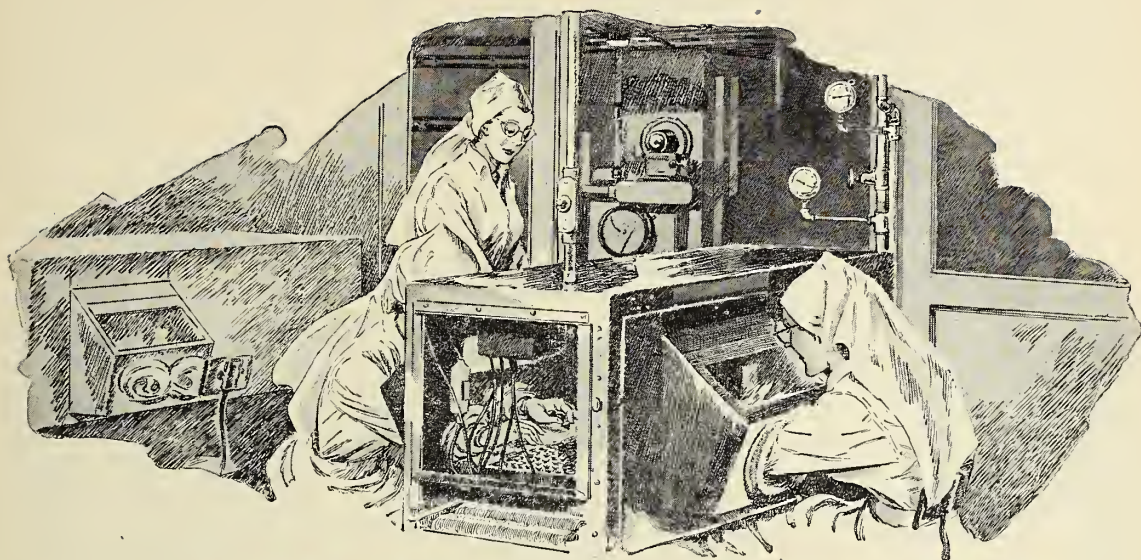


Figure 2-B. Degeneration and necrosis of myocardium is evidenced by vacuolated fibrils. Also numerous inflammatory cells including foamy histiocytes are present. x 30.





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Physiologists for years have maintained that this concept is not true and that there is no experimental evidence to prove the point. They say that pulmonary edema is primarily cerebral and neurogenic in origin, perhaps associated with cerebral anoxia. They cite as evidence that a person can have an infarct in the right ventricle and develop pulmonary edema with no change in the emptying time of his left ventricle. Further evidence is the fact that the best treatment for pulmonary edema is morphine which has a cerebral effect and no myocardial effect. I personally agree with this thought—that pulmonary edema is neurogenic, reflex in origin, and controlled by higher nerve centers.

The best treatment for pulmonary edema with that thought in mind then is: 1. Give morphine. Morphine has a central sedative action. 2. Give oxygen to correct anoxia. Give the oxygen under positive pressure so that there is a counteracting pressure to the increased intercapillary pulmonary pressure. That is a very dramatic way of treating pulmonary edema. It is a specific form of treatment.

The effect of aminophylline is beneficial if given slowly. If aminophylline is given rapidly it increases the cardiac work. If given slowly, it is a bronchial dilator, and in treatment of pulmonary edema there is marked bronchial spasm accentuating the anoxia. Slowly given intravenous aminophylline,  $3\frac{3}{4}$  to  $7\frac{1}{2}$  grains, is a specific treatment. Atropine may be beneficial as a drying agent and perhaps in blocking reflex vagal effect. As to the true usefulness of atropine, there is disagreement. However, if it is to be used, it should be given in large amounts of  $1/50$  to  $1/75$  of a grain.

In summary, I think the treatment of pulmonary edema should be: 1. Good big repeated doses of morphine. 2. Oxygen under pressure. 3. Aminophylline by vein. 4. If you think the patient has cardiac failure due to intrinsic heart disease, digitalize him and digitalize him rapidly. And when you wish to use tourniquets or to bleed him, I suspect that you are doing something while waiting for other drugs to take effect. 5. Atropine may be helpful, if an adequate amount is given.

Dr. Major (Medicine): It is difficult for me to dismiss the possibility of pneumonia in the face of fever of  $103^{\circ}\text{F}$ . and a white blood count of 37,000.

Dr. Wahl: I looked over many blocks of tissue taken throughout the lungs. We were looking for pneumonia because of the history. We distinctly tried to find evidence of pneumonia. There were just a few polys in any alveolus. No single space had more than five or six polys. I knew this count went up to 37,000 but he certainly hasn't microscopic evidence of pneumonitis.

#### Summary

The phlegmatic individual presenting himself as

an ambulatory patient may easily diminish the physician's sharpness and acuity in recognition of a serious illness. Just such a situation existed here. A further lesson is to be learned regarding the importance of historical omissions. Failure to learn of the presence, duration, and character of chest pain resulted in preliminary ignorance of the probable presence of coronary artery disease. Pulmonary edema is easily most often seen by the physician in the home in situations so emergent that the patient cannot be moved. Nevertheless the physical characteristics of pulmonary edema are so clear that it should never be confused. Its presence should indicate the most likely site of disease to be in the heart.

Finally, there is increasing evidence of central and neurogenic factors in its origin.

#### Fifth Medical School Issue

An invitation to contribute scientific papers to this, the fifth annual University of Kansas School of Medicine issue of the Journal, was extended to the different departments at the school, and the response was immediate and generous. Since space limitations prohibit use of all the material in one issue, several papers were scheduled for publication at different times.

Two papers which appeared in the February issue, "The Problem of Success and Failure in the School Age Child" by Dr. Rodger A. Moon and "Rapid Rehabilitation of Disabilities of the Knee" by Dr. Donald L. Rose and Lilyan G. Warner, were submitted for the university issue.

The following papers will be published in later issues of the Journal: "The Surgical Treatment of Extensive Skin Cancer of the Lower Eyelid" by Dr. Creighton A. Hardin and Dr. David W. Robinson, "Infantile Cortical Hyperostoses" by Dr. John F. Bowser, "The Diagnosis and Treatment of Subdural Hematomas in Infants" by Dr. John R. Patterson and "A Roentgenographic Study of Edentulous Jaws" by Dr. Ralph W. Edwards.

Nursing needs have increased in spite of lower death rates, longer life expectancies, and a generally healthier population. The number of people in the United States has increased by an estimated 16,000,000 since the 1940 census. More people are now living to an older age than ever before, and consequently the diseases and disabilities of older people have multiplied. A high standard of living has prevailed since the early years of the war, medical prepayment plans have spread, and public health services have been expanded in many areas. In 1940, 10,087,000 patients were admitted to hospitals in the United States, but by 1948 the number of hospital admissions had risen to 16,422,000.—*Public Health Reports, August 5, 1949.*



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\**Proc. Soc. Exp. Biol. and Med.*, 1934, 32, 241-245; *N. Y. State Journ. Med.*, Vol. 35, 6-1-35, No. 11, 590-592;  
*Laryngoscope*, Feb. 1935, Vol. XLV, No. 2, 149-154; *Laryngoscope*, Jan. 1937, Vol. XLVII, No. 1, 58-60

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## BLUE SHIELD

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### Blue Cross Experience Affects Blue Shield

A great deal has been achieved in establishing a better understanding of Blue Shield among participating physicians. It has been done primarily through the Blue Shield Relations Committee of the Kansas Medical Society. Up until now very little has been done in the way of bringing to the attention of doctors information on the workings of Blue Cross.

Both Blue Cross and Blue Shield are offered to the public as a single package program. During the past year Blue Shield enrollment has been slightly ahead of Blue Cross in that many people who were previously members of Blue Cross are now adding Blue Shield to their coverage. The present membership in Blue Cross is 410,046 members, whereas Blue Shield has 258,589. It is foreseen that eventually Blue Shield enrollment will come pretty close to equalling the enrollment in Blue Cross. However, since both plans are sold as a package the cost of Blue Cross membership has a direct bearing on the acceptance of Blue Shield by the public and vice versa. The public thinks of both plans as a single organization.

During 1950 Blue Cross paid out in terms of hospital service for members slightly over 90 per cent of its income. Only 10 per cent of the income was used for administrative expenses. The number of hospital admissions per 100 Blue Cross members increased during the year. The rate of admissions during 1948 was 14.2 members per 100, while this rate for 1950 was 16.2 members per 100. This means that Blue Cross experienced a rate of over 8,000 additional admissions per year. Furthermore, the total hospital charges per case increased 24 per cent during this period. In 1948 the average charge per case was \$73.32 whereas the average charge per case in the last quarter of 1950 was \$91.43. This experience means that it will be necessary for Blue Cross to work out a new contract during 1951. It is expected that this new contract will involve an increase in dues as well as an increase in benefits.

This information is presented in the interest of showing physicians that the utilization of hospital service by Blue Cross members has a direct bearing on the over-all Blue Cross-Blue Shield program. At a recent Hospital-Physician Relations Conference of Blue Cross-Blue Shield Plans in Chicago a great deal of emphasis was placed upon the need for both organizations to consciously plan a program of physician relations to inform physicians on Blue Cross

problems. Doctors are the final arbiters as to whether or not Blue Cross members shall go to the hospital and as to what services the members shall receive in the way of drugs, laboratory, etc. If the individual physician is aware of the effect which unnecessary use of service will have upon the Blue Cross-Blue Shield future, it is felt that he will help to curb some of the demands of patients for unnecessary hospital admission and service.

The Kansas Hospital Association is studying the over-all problem of high use by members. It is expected that the association will make recommendations to the effect that Blue Cross bring the proper information on this question to the doctors of the state. Actually a group of physicians already exists for helping in this program. The nucleus of this group might well be the eight physicians serving on the Blue Cross Board of Trustees. Since doctors have a voice in determining Blue Cross policy it is felt that they will wish to assume reasonable responsibility in keeping the plan in a position where it can provide the greatest possible service at the lowest possible cost. The entire information program to eliminate unnecessary use of service will be on a voluntary basis. It is simply a question of asking physicians to "turn out the lights in rooms that are not being used." In other words, all that Blue Cross will ask is that *the true needs of the patient as interpreted by the physician* be the deciding factor as to whether a patient is to receive service under his Blue Cross membership.

Some startling savings might result through wholehearted cooperation by physicians. For example, if one-half day could be cut off the average length of stay, it would produce a savings of over \$270,000 per year. Or if the rate of admission could be cut from 16.2 admissions per 100 members to 15.2 per 100, it would produce a saving of 4,000 cases or over a quarter of a million dollars. All such savings would mean a better package program at less cost, which in turn should mean a more rapid rate of enrollment.

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### Discuss Field Medical Equipment

More than 100 medical and dental officers of the United States Army, Navy and Air Force met in Montreal recently with representatives of the United Kingdom and Canada to discuss field medical and dental equipment for the services of the three countries. Among the subjects discussed were medical equipment in the Arctic, Arctic survival, pharmaceutical supply units, field surgical units, field dental units, field malaria and epidemic disease control, field radiographic and laboratory work, antiseptics, and Arctic clothing at sea.



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Hamblen, E. C.: North Carolina M. J. 7:533 (Oct.) 1946.

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\*Perloff, W. H.: Am. J. Obst. & Gynec. 58:684 (Oct.) 1949.

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### 92nd Annual Meeting of K.M.S.

Committees of the Shawnee County Medical Society are now completing arrangements for the 92nd annual meeting of the Kansas Medical Society, to be held in Topeka, May 14-17, 1951. A number of well known scientific speakers from out of the state are scheduled to present papers of interest to specialists and general practitioners alike, and sectional meetings which will feature Kansas physicians as speakers are being arranged.

Among the medical specialists who will present the scientific program are the following:

Ethan A. Brown, M.D., lecturer in allergy, Tufts College Medical School, Boston.

Charles H. Burnett, M.D., professor of internal medicine, Southwestern Medical School of the University of Texas, Dallas.

Tullos O. Coston, M.D., assistant professor of ophthalmology, University of Oklahoma School of Medicine.

Stuart C. Cullen, M.D., chairman, Division of Anesthesiology, State University of Iowa, Iowa City.

William J. Engel, M.D., urologist, Cleveland Clinic, Cleveland, Ohio.

Thomas F. Frawley, M.D., internist, Peter Bent Brigham Hospital, Boston.

N. Frederick Hicken, M.D., associate clinical professor of surgery, University of Utah School of Medicine.

Robert L. Jackson, M.D., associate professor of pediatrics, State University of Iowa.

John H. Moore, M.D., obstetrician and gynecologist, Grand Forks Clinic, Grand Forks, North Dakota.

Clyde L. Randall, M.D., professor of obstetrics and gynecology, University of Buffalo School of Medicine, Buffalo, New York.

John R. Schenken, M.D., professor of pathology and bacteriology, University of Nebraska, Lincoln.

Albert C. Stutsman, M.D., instructor in clinical otolaryngology, Washington University School of Medicine.

Round table luncheons will be held each day of the meeting, and the usual entertainment features, highlighted by the annual banquet on May 16, will be provided.

Hotel reservations should be made immediately. Those who plan to attend should write directly to the hotel of their choice. The larger hotels in Topeka are the Jayhawk and the Kansan.

### Nominations for Society Offices

The House of Delegates of the Kansas Medical Society at the annual meeting in 1950 amended the constitution and by-laws of the Society to provide

for a nominating committee to prepare a slate of candidates for Society offices. The amendment also provided that at least two nominations must be made for each elective office and that the names of the candidates be published in the Journal. Additional nominations may be made from the floor.

A nominating committee of five members, selected from a list of past presidents of the Society, was elected by the House of Delegates. The committee met in Topeka last month, with all members attending, and prepared the following slate from which officers will be elected at the annual session in Topeka on May 17, 1951: president-elect, Dr. W. F. Bernstorff, Winfield, and Dr. Barrett A. Nelson, Manhattan; first vice president, Dr. J. V. Van Cleve, Wichita, and Dr. Lucien R. Pyle, Topeka; second vice president, Dr. Conrad M. Barnes, Seneca, and Dr. Murray C. Eddy, Hays; treasurer, Dr. Vernon Wiksten, Topeka, and Dr. Byron J. Ashley, Topeka; secretary, Dr. Dale D. Vermillion, Goodland, and Dr. Robert Sohlberg, McPherson; delegate to A.M.A., Dr. John M. Porter, Concordia, and Dr. Thomas P. Butcher, Emporia; alternate, Dr. J. L. Lattimore, Topeka, and Dr. P. E. Hiebert, Kansas City.

### DEATH NOTICES

#### JOHN GURLEY MISSILDINE, M.D.

Dr. J. G. Missildine, 66, an active member of the Sedgwick County Medical Society, died at his home in Wichita, January 30. He was graduated from the University of Maryland School of Medicine and the College of Physicians and Surgeons, Baltimore, in 1911 and received his Kansas license in 1912. He went to Wichita from Parsons in 1920, and continued to practice there except for a time during World War II when he served in the Army medical corps. He specialized in urology and dermatology.

\* \* \*

#### JONATHAN BASIL CARTER, M.D.

Dr. J. B. Carter, 73, an active member of the Central Kansas Medical Society, died February 3 at Ellsworth. After his graduation from the University of Kansas School of Medicine in 1910, he began practice in Lorraine and later moved to Wilson. He served in the medical corps in both world wars and remained in the armed forces after World War II, retiring several months ago. Dr. Carter was interested in civic and political matters. He served Wilson as its mayor for two terms and later represented the 32nd district in the state senate.



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## ACTIVITIES OF MEMBERS

The American College of Anesthesiologists announces that Dr. William O. Martin, Topeka, and Dr. Edgar M. Sutton, Salina, became fellows of the college recently.

\* \* \*

Dr. C. M. Fitzpatrick, Salina, has been appointed health officer of Saline County, filling the vacancy created by the resignation of Dr. L. S. Nelson, Jr.

\* \* \*

Dr. Richard L. Sutton and Richard L. Sutton, Jr., Kansas City, were recently elected to corresponding membership in the Swedish Dermatological Society.

\* \* \*

Dr. J. W. Cheney and Dr. Paul C. Carson, Wichita, were honored by the Kansas Children's Service League last month in recognition of 25 years of service to the organization.

\* \* \*

Dr. A. J. Randolph, Kansas City, was named deputy coroner for Wyandotte County recently.

\* \* \*

Dr. F. C. Beelman of Topeka, deputy of health for the Kansas civil defense program, discussed the atom bomb before the Lions Club at Perry last month.

\* \* \*

Dr. R. J. Metcalf, El Dorado, has been named acting director of the Butler-Greenwood-El Dorado board of health, taking the place of Dr. Richard Reece, who is to report for active duty with the Army on March 16.

\* \* \*

Dr. C. T. Sills, Newton, gave a history of the fight against tuberculosis at a meeting in Newton preceding the county chest x-ray survey.

\* \* \*

Dr. Charles R. Svoboda, Chapman, has been appointed health officer for Dickinson County for 1951.

\* \* \*

Dr. M. O. Steffen, Great Bend, stated objections to socialized medicine at a meeting of the A.A.U.W. in Great Bend last month.

\* \* \*

Dr. J. L. Wentworth, Dr. E. H. Clayton and Dr. W. G. Weston, Arkansas City, presented hospital equipment valued at \$1,800 to the new Memorial Hospital there.

\* \* \*

Dr. John B. Nanninga, Newton, has been named chief of health services of the Newton-Harvey County civil defense group.

Dr. J. D. Colt, Sr., Manhattan, was the subject of a feature story in a recent issue of the Manhattan Tribune. The story told of his many professional and civic activities and mentioned that he was president of the Kansas Medical Society in 1933.

\* \* \*

Dr. S. A. Scimeca, Caney, has announced that he will practice in Elk City on Wednesday of each week.

\* \* \*

Dr. R. E. Capsey, Centralia, has been named health officer for Nemaha County.

\* \* \*

Dr. Henry C. Eichelmann has been named civil defense director for the city of Norwich.

\* \* \*

Dr. Donald P. Trees, Wichita, discussed "What's New in Medicine" at a meeting of the Hyde P.T.A. in Wichita recently.

\* \* \*

Dr. A. R. Chambers, Iola, is serving as physician for the Durite Corporation, manufacturers of lawn mowers, in Iola.

\* \* \*

Dr. G. I. Thacher, Waterville, was recently named health officer of Marshall County, replacing Dr. C. M. Newman, Axtell, who has retired.

\* \* \*

Dr. E. J. Ryan, Emporia, spoke on "World Health Problems" at a recent meeting of the Emporia branch of the A.A.U.W.

\* \* \*

Dr. J. H. Johnson is serving as chairman of the health group of the El Dorado Red Cross Disaster Committee.

\* \* \*

Dr. Edward H. Johnson has closed his office in the State Bank building in Peabody and has not announced plans for future practice.

\* \* \*

Dr. James A. Wheeler, Newton, discussed infection before a group of nurses in District Four at a meeting held in Newton recently.

\* \* \*

Dr. Arthur E. O'Donnell, Dr. Fred W. O'Donnell and Dr. Harry E. O'Donnell, Junction City, recently purchased new office equipment and gave old machines to the Junction City high school for observation work. The gift included three x-ray machines, two fluoroscopes, a developing tank and a vibrator.

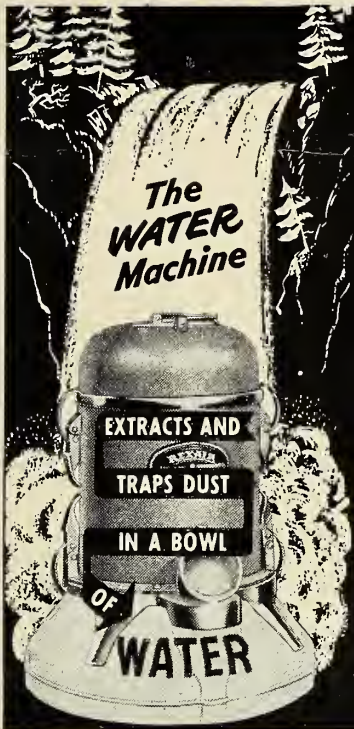
\* \* \*

Dr. G. L. Campbell is representing the medical profession on the Arkansas City civil defense board.

\* \* \*

Dr. D. Cramer Reed, Wichita, addressed 150 volunteer workers for the American Cancer Society at





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a meeting held last month in Wichita. He spoke on "The Cancer Problem Today."

\* \* \*

Dr. and Mrs. F. A. Garvin, Augusta, recently observed their 58th wedding anniversary.

\* \* \*

Dr. Robert L. Stevens, Garnett, reported to the Army at Camp Carson, Colorado, on February 5, to serve as a first lieutenant in the medical corps. His wife, Dr. Mildred Julius Stevens, will continue practice in Garnett.

\* \* \*

Dr. Ralph G. Ball represents the medical profession in the civil defense organization for Manhattan and Riley County.

\* \* \*

Dr. T. D. Ewing, Bushton, spoke on "Occupation of Japan" before the Lions Club at Holyrood recently.

\* \* \*

Dr. R. R. Snook, McLouth, was one of the speakers at a meeting of the Jefferson County Cancer Society at Valley Falls recently.

\* \* \*

Dr. Edward D. Greenwood, director of the Southard School, Topeka, was one of the speakers at the organization meeting of the Kansas Hospital Recreation Society held at Topeka, January 27. Members of the group are recreational therapists at nine Kansas institutions.

\* \* \*

Dr. C. W. Wilson, St. Francis, was named Cheyenne County physician recently.

\* \* \*

Dr. Charles S. Davis, who has been practicing in Galena for 17 months, received orders to report for active duty in the Army early in February. He has been commissioned a first lieutenant.

\* \* \*

Dr. Chester H. Smith has been named to direct matters affecting health on the civil defense council at Pittsburg.

\* \* \*

Dr. George S. Hopkins, surgeon at the Santa Fe Hospital, Topeka, was recently elected to fellowship in the American College of Surgeons.

\* \* \*

Dr. W. T. Read has been named director of health for the Coffeyville civil defense program.

\* \* \*

Dr. Gertrude E. Martin of Sterling, who practiced a few years ago at the Trueheart Clinic, opened an office for private practice in the Culbertson Building there on February 20.

\* \* \*

Dr. Robert G. Smith, Topeka, was recently elected

to fellowship in the International College of Surgeons.

\* \* \*

Dr. B. E. Miller, Council Grove, announces that Dr. Byron A. Yost and Dr. Robert W. Blackburn are now associated with him in practice. Both are graduates of the University of Kansas School of Medicine and have been practicing in Wellington.

\* \* \*

Dr. Lee H. Leger, Kansas City, took part in a radio program on February 11 over station WDAF, Kansas City. The program was sponsored by the Kansas Heart Association, of which he is vice president.

\* \* \*

Dr. B. H. Mayer, Ellsworth, is chairman of the public health committee for the Ellsworth County civil defense unit.

\* \* \*

Dr. F. E. Harvey, who has practiced in Minneapolis for 46 years, was the subject of a feature story in the Minneapolis Messenger on February 15.

\* \* \*

Dr. James Pretz, Kansas City, has resigned as physician for Wyandotte County and is to report for active duty in the Army on March 12.

\* \* \*

Dr. O. C. McCandless, who has been Marion County health officer for nine years, resigned that position to become director of the city-county health unit in Cheyenne, Wyoming. He began his new work March 1.

\* \* \*

Dr. Raymond J. Beal, Fredonia, addressed the Business and Professional Women's Club in that city at its February meeting, speaking on the subject of cancer.

\* \* \*

Dr. B. V. Thompson, who has been associated with the Hatcher Clinic at Wellington for the past five years, left the organization March 1 and went to Florida for several weeks visit. He will maintain his home in Wellington but has not announced plans for the future because of possible entry into the military forces.

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Objectives of the Commission on Chronic Illness are listed as follows: (1) modify society's attitude that chronic illness is hopeless; (2) define the problems arising from such illness in all age groups; (3) coordinate separate programs for specific disease with a general program designed to meet the needs of all the chronically ill; (4) clarify the relationships of all groups working in the field; (5) stimulate in every locality a well-rounded plan for the prevention and control of chronic disease and the care and rehabilitation of the chronically ill.



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Karl J. Waggener, M.D.

Wendell T. Wingett, M.D.

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## COUNTY SOCIETIES

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A meeting of the Shawnee County Society was held at Topeka, February 5. Dr. Roger W. Ridley, Rochester, Minnesota, spoke on "Application of Regional Anesthesia in Diagnosis and Treatment." At the business session four Topeka physicians were elected to membership, Dr. Richard L. Merkel, Dr. M. D. Morris, Dr. Donald R. Pierce and Dr. William H. Wood. For the benefit of physicians from outside the county who attend meetings in Topeka, the society announces that its meeting date has been changed to the Tuesday following the first Monday of each month.

\* \* \*

Dr. V. J. Vaughn, Axtell, was named president of the Marshall County Society at a recent meeting held at Marysville. Dr. D. M. Diefendorf, Waterville, was elected vice president and Dr. R. D. Hughes, Frankfort, was named secretary.

\* \* \*

The annual dinner meeting of the Cowley County Society was held recently at the Esquire Club south of Arkansas City. Wives of the members were guests.

\* \* \*

New officers of the Nemaha County Society were elected at a meeting held last month in the office of Dr. C. M. Barnes, Seneca. Dr. Arthur H. Haynes, Sabetha, is president; Dr. C. C. Hunnicutt, Sabetha, vice president; Dr. John Howard Gilbert, Seneca, secretary-treasurer. After the business session the group joined members of the Auxiliary for a social hour at the Barnes home.

\* \* \*

Physicians of Chautauqua and neighboring counties were guests of the Sedan Chamber of Commerce at a dinner at the school cafeteria on February 1. The group was shown through the new Sedan City Hospital, which held its formal opening on the following Sunday.

\* \* \*

Dr. Walter F. Kvale, internist from the Mayo Clinic, Rochester, Minnesota, was speaker at the February meeting of the Sedgwick County Society. His subject was "Occlusive Arterial Diseases."

\* \* \*

A meeting of the Marion County Society was held at Coons' Restaurant, Marion, on February 7. Dr. H. F. Janzen, Hillsboro, and Dr. T. C. Ensey, Marion, presented the scientific program.

\* \* \*

The Rice County Society elected officers at a meeting held at Lyons in January. Dr. T. D. Ewing was named president; Dr. J. C. Dysart, vice presi-

dent; Dr. E. R. Hill, secretary-treasurer. A professional film, "Hemi-colectomy," was shown.

\* \* \*

A meeting of the Douglas County Society was held February 13 at Watkins Hospital, Lawrence. Dr. Ralph I. Canuteson spoke on the use of BCG vaccine in tuberculosis control.

\* \* \*

The Crawford County Society met at the Hotel Besse, Pittsburg, February 22 with 28 members attending. Dr. Marvin F. Hall, Joplin, Missouri, spoke on opaque media in x-ray diagnosis. At the business session the group endorsed the efforts of the Southeast Kansas Tuberculosis Association to obtain a tuberculosis sanitarium for that section of the state. The society also voted to ask for extension courses for 1951 and 1952 with Mt. Carmel Hospital offering its facilities.

---

### Proposed Change for K.M.A.S.

A change in the constitution of the Kansas Medical Assistants Society, to provide for a nominating committee, has been proposed and will be voted on at the annual meeting of the organization in May. The wording of the proposed amendment is as follows:

The annual nomination for president, president-elect, vice president, secretary and treasurer shall be made by a nominating committee to be appointed by the president at least six (6) months prior to the annual election. The nominating committee shall be composed of five members and shall be appointed by the president to represent the Society on a geographic basis. The chairman of the nominating committee shall be a past president of the Society.

Two names shall be presented by the nominating committee for each office, no nominations to be made without the consent of the nominee. Nominations for each office may also be made from the floor.

The candidate receiving the greatest number of votes shall be elected.

---

A resolution passed by the Montana Chamber of Commerce recently reads as follows: "We oppose federal medicine for the simple reason that like every other key plank to Marxian socialist doctrine it simply will not work. No nation in the world has better medical care or is in better health than the United States. This obvious fact leads us to believe that socialized medicine is a scheme to exploit the doctors who are a minority in order to pretend to distribute benefits to the voting majority who are the people. This is dishonest."



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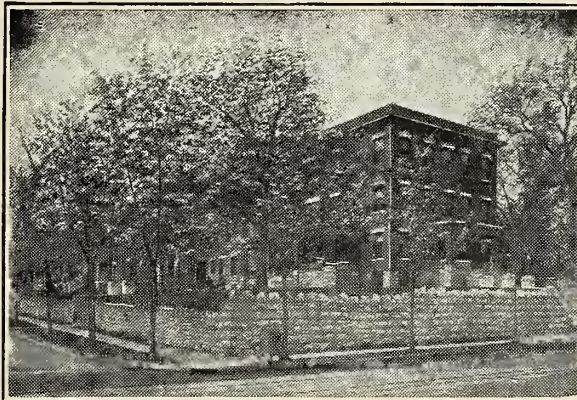
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## ANNOUNCEMENTS

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The Mid-Continent Psychiatric Association, a branch of the American Psychiatric Association, will meet March 31 and April 1 at the Hotel President, Kansas City, Missouri. Among the speakers will be Dr. Charles F. Von Salzen of Hartford, Connecticut, Dr. Martin H. Hoffman of Detroit, Michigan, and Dr. Guy F. Witt of Dallas, Texas. Physicians are cordially invited to attend. Those planning to be present should notify Dr. Paul Hines, 2625 West Paseo, Kansas City, Missouri.

\* \* \*

The Michael Reese Hospital Postgraduate School, Chicago, announces three spring courses. First is a course on clinical dermatology, April 2 to April 7, with clinics and lectures conducted by members of the Department of Dermatology and Syphilology. The second course is "Surgery—Indications, Pre- and Post-Operative Care," April 9 to April 14. "Recent Advances in Internal Medicine" is the subject of the third course, April 30 to May 12.

Complete information may be secured from Dr. Samuel Soskin, Dean, 29th Street and Ellis Avenue, Chicago 16, Illinois.

\* \* \*

The 1951 meeting of the American Goiter Association will be held in the Deshler-Wallick Hotel, Columbus, Ohio, May 24, 25 and 26. The program will consist of papers dealing with goiter and other diseases of the thyroid gland, dry clinics and demonstrations.

\* \* \*

The fifth annual Symposium on Fundamental Cancer Research of the University of Texas M.D. Anderson Hospital for Cancer Research will be held at the Texas Medical Center, Houston, April 20 and 21. A meeting of the South Central Region of the College of American Pathologists will also be held. Dr. Fred W. Stewart will deliver the second Bertner Foundation Lecture at the banquet on April 21. Further information may be obtained from William O. Russell, M.D., 2310 Baldwin Street, Houston, Texas.

\* \* \*

The Kansas City Southwest Clinical Society again this year is offering awards for papers by graduates in medicine serving residencies or internships in approved hospitals in this area, Arkansas, Colorado, Iowa, Kansas, Missouri, Nebraska, or Oklahoma. Each paper must represent original work, a review of clinical cases in the hospital or actual experimental work in the laboratory in which the contestant is serving his residency or internship. The winner will receive \$500 and will present his thesis

before the general assembly at the fall clinical conference of the society. Winners of second and third awards will receive \$100 and \$50, respectively.

Applications, endorsed by the chairman of the resident-intern committee or the superintendent of the hospital, must be made in writing and mailed to the society by April 15, 1951. Papers will be accepted to August 2, 1951. The address of the society is 630 Shukert Building, Kansas City 6, Missouri.

\* \* \*

A course in ophthalmology and otolaryngology will be offered at the University of Kansas Medical Center, April 16-20. The list of guest instructors includes Dr. F. Bruce Fralick, professor of ophthalmology and chairman of the department, University of Michigan School of Medicine; Dr. Howard P. House, clinical professor of otolaryngology and head of the department, University of Southern California School of Medicine; Dr. Carl C. Johnson, associate surgeon in ophthalmology, Harvard Medical School and the Massachusetts Eye and Ear Infirmary; Dr. Irving H. Leopold, attending ophthalmologist, Wills Eye Hospital, and consulting ophthalmologist, University of Pennsylvania Medical School; Dr. Theodore E. Walsh, professor of otolaryngology and chairman of the department, Washington University School of Medicine.

\* \* \*

A course in the theory and techniques of autoradiography will be held during the coming summer by the Special Training Division of the Oak Ridge Institute of Nuclear Studies, beginning on July 2 and continuing for from three to four weeks. Subjects to be covered in lectures and laboratory sessions will include the theory of the photographic process, reaction of ionizing particles with photographic emulsions and the interpretation of results; techniques of making gross and microscopic autoradiograms. Registration for the course will be \$25. Application forms may be secured from Ralph T. Overman, chairman, Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tennessee.

The first 4,000 replies received to a questionnaire sent out by a Texas Congressman, Representative Ben Guill, indicate that Texans do not favor socialized medicine. The question was asked as follows: "Do you favor the proposed national health insurance law which would provide medical and hospital care for everyone (also known as Socialized Medicine) at a cost of an estimated six billion dollars in new taxes?" One hundred sixty-seven answered yes, 3,623 replied in the negative, and 115 expressed no opinion.



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## AMERICAN BOARD EXAMINATIONS

*Anesthesiology.* Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn. Oral, Coronado, Calif., Apr. 4-7; and Memphis, Oct. 14-17.

*Dermatology and Syphilology.* Sec., Dr. George M. Lewis, 66 East 66th St., New York 21. Written, various centers, Apr. 5. Oral, New York, June 8-10.

*Internal Medicine.* Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3. Written, various centers, Oct. 15. Final date for filing applications is May 1. Oral on regional basis, Kansas physicians at St. Louis April 4-6 or 5-7.

*Obstetrics and Gynecology.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

*Ophthalmology.* Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine. Oral, New York, May 31-June 5; Chicago, Oct. 8-13.

*Otolaryngology.* Sec., Dr. Dean M. Lierle, University Hospital, Iowa City. Oral, Richmond, Va., May 1-5.

*Pathology.* Sec., Dr. Robert A. Moore, 1402 S. Grand Blvd., St. Louis.

*Pediatrics.* Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa. Oral, Cincinnati, March 30-April 1; Atlantic City, May 5-7.

*Physical Medicine and Rehabilitation.* Sec., Dr. Robert L. Bennett, 30 N. Michigan Ave., Chicago. Parts 1 and II, Philadelphia, June 16-17.

*Plastic Surgery.* Sec., Dr. Bradford Cannon, 330 Dartmouth St., Boston.

*Preventive Medicine and Public Health.* Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore. Biloxi, Miss., April 24-25.

*Proctology.* Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn. Kansas City, Minneapolis, Philadelphia and San Francisco, May 12.

*Psychiatry and Neurology.* Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

*Radiology.* Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn. Oral, Atlantic City, June 5-9.

*Surgery.* Sec., Dr. J. Stewart Rodman, 225 South 15th St., Philadelphia. Written, various centers, October, 1951. Final date for filing applications is July 1.

*Thoracic Surgery.* Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit. Oral, New York, April 19.

*Urology.* Sec., Dr. Harry Culver, 314 Corn Exchange Bldg., Minneapolis 15. Chicago, Feb. 9-13, 1952. Final date for filing applications is Sept. 1.

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## THE KANSAS PRESS LOOKS AT MEDICINE

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### Who Opposes Socialized Medicine?

It is frequently argued that most of the opposition to either socialized medicine or government-controlled medicine originates within groups whose motives are entirely selfish, and who are completely without interest in the welfare of the masses of people.

That argument cannot withstand the light of fact. Current proposals for government medicine have met with the formal opposition of 15 state legislatures, and the amazing total of 10,000 national, state and local organizations. Among these are the General Federation of Women's clubs, the American Legion, the Veterans of Foreign Wars, the American Bar Association, and the American Farm Bureau Federation.

To say that organizations of this character are inspired by the selfish considerations of a few people is to say the ridiculous. They represent millions of individuals, of all political faiths, and of all the economic levels. They agree on the issue of government medicine for one reason—their belief that it would reduce the quality of medical care, that it would place a tremendous and unnecessary burden on the taxpayers, and that the growth of our established system of medical care, along with the many voluntary insurance plans, offers the best available solution to our health problems.

Those who would socialize, or otherwise regiment the practice of medicine, work on the theory that if a roof leaks, the solution is to burn down the house. That there are gaps in our medical care system goes without saying—and doctors are among the first to realize this, and to take measures to close them. In recent years, enormous progress has been made. The future will bring greater progress still—if the hand of the politician can be kept off the back of the doctor.—*Eureka Herald*, October 12, 1950.

\* \* \*

### Socialized Medicine

The New York Times said January 17: "One of the brightest spots in Federal activities during the past few years has been the high quality of medical service given veterans.

"...our veterans since 1945 have had medical care 'second to none.'"

The Federal Government, of course, owns veterans' hospitals and hires the doctors who treat the ex-servicemen.

That is genuine socialized medicine—and it has worked out all right in that case.

But the medical lobby, the American Medical Association (AMA), falsely labels national health insurance as "socialized medicine," although private hospitals would remain private under the national health insurance program and private physicians would keep their private practice.

Even so, in view of the fine record made by the real article—treatment for veterans—perhaps the AMA will quit trying to damn national health insurance as "socialism."

But we doubt it. "Socialism" is too good a cuss word for the medical brass and its press agents to give up.—*Kansas City Labor Bulletin*, February 9, 1951.

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On an average weekday in February 1949 there were about 4,569,000 persons from 14 to 64 years of age in the civilian population of the entire United States disabled by illness or some condition that prevented them from doing anything but occasionally part-time work. This does not include persons between these ages in resident institutions or in the armed services. A rough estimate for these two categories . . . brings the total up to 5,310,000, or 5.4 per cent of the population between these ages.—*Theodore D. Woolsey, Biostatistician, Public Health Reports*, February 10, 1950.

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### Accidental Death Rate High

Accidents killed 1,431 persons in Kansas during 1949, according to a report issued recently by the Kansas State Board of Health. That figure made accidents the fourth leading cause of death in this state for the year, with only heart disease, cancer and cerebral hemorrhage taking a higher toll. The Kansas rate was 20 per cent higher than that for the nation, and only six states had higher accidental death rates.

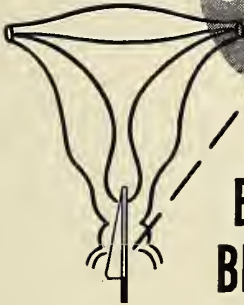
In the younger age group, from five years to 44, accidents are the leading cause of death. In the group between 15 and 24 years of age, accidents are responsible for one-half the total number of deaths.

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In various forms—whether poliomyelitis, tuberculosis, cardiovascular disease, diabetes or any of the other abnormalities that are likely to alter a patient's social and economic activities—these chronic conditions account for three-fourths of all illness today. Progressive control of infectious diseases and the increasing numbers of elderly people in the population are bringing about a situation in which the chronic illnesses and preventive medicine may in the future demand the entire attention of physicians. — *New England Journal of Medicine*, August 10, 1950.



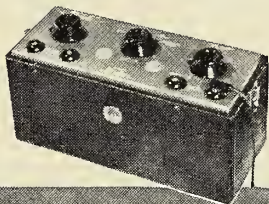
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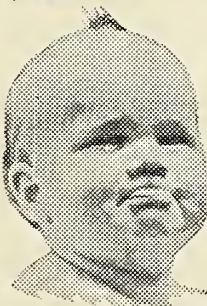
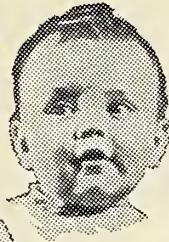
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## ABSTRACTS FROM CURRENT LITERATURE

### Neurologic Lesions in Infants

*Neurologic Lesions in the Newly Born Infant.* By Keith M. Haddow and Mildreda Norval, *Ped.*, 6:2, Aug., 1950.

The authors' material covered the years 1944 through 1947. There were 4,411 deliveries on the obstetric service at St. Mary's Hospital, Rochester, Minnesota. Fifty-seven of these infants (1.3 per cent) had lesions, clinical or pathologic, which affected the nervous system primarily and these were evident during the first two weeks of life.

There were 12 infants who died during the first week which presented the following: anencephaly, exstrophy of the bladder, hydro cephalus and meningocele, anencephaly and prematurity, atelectasis, multiple congenital anomalies, imperforate anus, polycystic kidney, prematurity, spina bifida, cerebral hemorrhage, asphyxia, external hydrocephalus, hypoplasia of the aqueduct of sylvius, cerebral anoxia, erythroblastosis fetalis.

Ten babies lived 18 days to eight months. Twenty-two infants survived for nine months or more, 13 had gross neurologic abnormalities, and two of the remaining nine were subjected to difficulty during birth. One had bilateral brachial palsy and one had two convulsive seizures. Both were normal at one year and 15 months of age. Six of the nine had muscle twitching and convulsions, but were well after intervals of seven months to four and one-half years. A remaining child had multiple congenital abnormalities and experienced convulsions.

A survey was made to determine the relationship of prolonged labor, asphyxia and delayed respiration to the occurrence of trauma and, thereby, neurologic lesions of the infant. As might be expected, prolonged labor appeared to increase the risk of intracranial hemorrhage and death of the infant. However, if the infants survived, there was little or no abnormality in subsequent development and no increase in neurologic disturbances, at least during the first few years of life. More children had convulsive disorders in the normal group than in those subject to prolonged delivery. The same held true among the infants who were asphyxiated; that is, there were more who had convulsive disorder in the control group than in those who were asphyxiated. There were more deaths and more abnormal infants among those who were asphyxiated, but these included a considerable number of premature infants, many not viable. If the infants survived the neonatal period, they developed normally, or at

least no more abnormalities were noted among those who were asphyxiated than among the controls.

Anoxia caused by delay in respiration did not have a serious prognosis in those infants who survived the neonatal period. Even a delay of 11 to 15 minutes, while fatal in two instances, did not appear to cause any abnormality, at least during the first four years of life, in the infants who survived. —D.R.D.

\* \* \*

### Intravenous Quinidine in Ventricular Tachycardia

*Intravenous Use of Quinidine in Ventricular Tachycardia.* By A. Henry Clagett, Jr., *Am. Jnl. Med. Sc.*, 220:4, 281-287, Oct., 1950.

Doctor Clagett adds and compares his series of 13 patients to a list of 84 previously treated patients reported by 14 authors. He used quinidine lactate which is now commercially available, 0.65 grams in 10 cc. solution in ampoules.

The indications for intravenous quinidine were:

1. A critically ill patient, usually with ventricular tachycardia, in whom oral quinidine had been ineffective or whose condition was so serious that there was no time for trial of the drug by mouth.
2. Patients who were to have chest or heart surgery or procedures necessitating cardiac manipulation. In this group oral administration was given preoperatively and during surgery and afterwards the quinidine was added to infusion fluids.

When possible an oral test dose of 0.2 gm. was given first. After trying other procedures the one of choice was to dilute the 10 cc. solution containing 0.65 gm. quinidine lactate in 50 cc. of five per cent glucose in a 100 cc. flask and administering this at two cc. per minute with constant observation. If more drug was needed the procedure was repeated. The total dose needed varied from 0.4 to 3.25 grams.

The author emphasizes his belief that previous fatalities attributed to quinidine may have been the result of the disease, impurities, or too great concentration of the intravenous solution or its too rapid administration.

He concludes by saying he believes if quinidine lactate is given in the manner described it is relatively safe and may be lifesaving in patients developing ventricular tachycardia following myocardial infarction where oral quinidine could not be used or had failed, or where the patient's condition is so critical as to demand the greatest speed. Electrocardiograms and case summaries are included. The fact that several deaths occurred in this small series is evidence of the gravity of the cases selected. Autopsy evidence accounted for the deaths without putting blame on quinidine though quinidine deaths are discussed. —P.W.M.



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ANDREW B. JONES, M.D., Assistant Professor of Clinical Neurology, Washington University School of Medicine, St. Louis.

ROLAND P. MACKAY, M.D., Professor of Neurology, University of Illinois College of Medicine, Chicago.

JAMES B. CAMPBELL, M.D., Neurosurgeon, The Menninger Clinic, Topeka.

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WAYLAND A. STEPHENSON, M.D., Instructor in Neurology.

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HENRY C. TRACY, Ph.D., Professor Emeritus of Anatomy.

HERBERT A. WENNER, M.D., Assistant Professor of Pediatrics and Bacteriology.

#### SUBJECTS TO BE DISCUSSED

THE SCOPE OF NEUROLOGY AS APPLIED TO MEDICINE.

A REVIEW OF NEUROANATOMY.

THE EXAMINATION OF THE CEREBROSPINAL FLUID.

DIAGNOSIS OF ENCEPHALITIS AND POLIOMYELITIS.

NEUROLOGIC HISTORY AND EXAMINATION.

THE BLOOD SUPPLY OF THE BRAIN.

THE BLOOD SUPPLY OF THE BRAIN AND SPINAL CORD—Clinical Application.

DIAGNOSIS AND TREATMENT OF TIC DOULOUREUX.

HEADACHE AND MIGRAINE.

DIAGNOSIS AND TREATMENT OF MENINGITIS.

PRINCIPLES OF CEREBRAL LOCALIZATION.

SYRINGOMYELIA.

MONONEURITIS AND POLYNEURITIS.

INTRACRANIAL TUMORS.

PARKINSON'S DISEASE AND PARKINSONISM — Diagnosis and Treatment.

MULTIPLE SCLEROSIS.

FUNDUS CHANGES IN NEUROLOGIC DISEASES.

THE MENTAL DEFICIENCY PROBLEM (Neurological).

THE MANAGEMENT OF HEAD INJURIES.

DIAGNOSIS AND TREATMENT OF NEUROSYPHILIS.

THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF CORD TUMORS AND INTERVERTEBRAL DISC.

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VASCULAR DISEASE OF THE BRAIN AND SPINAL CORD

#### Panel Discussion:

- (a) Medical Aspects
- (b) Neurologic Diagnosis
- (c) Medical Treatment
- (d) Rehabilitation

Program will also include two Neurological Clinics, both of two hours' duration and both including case presentation.

### Tracheobronchial Aspiration

*Tracheobronchial Aspiration with a Urethral Catheter.* By Leonard Cardon, J.A.M.A., 142:4, 1039-1044, Apr. 8, 1950.

The author points out that a frequent though often unrecognized complication of many diseases seen in daily practice is obstruction of the airway by accumulating tracheobronchial secretion with resultant asphyxia. This is not alone an anesthetic, post-operative, post-traumatic or neonatal problem but one encountered often in medical disease. He mentions bulbar polio, tetanus, whooping cough, pneumonia, acute cerebral damage, chest injury, acute pulmonary edema, morphine depression, barbiturate poisoning, acute alcoholism, diabetic or uremic coma, etc.

He recognizes that in certain cases bronchoscopy by a trained bronchoscopist is necessary, but points out that the greater number can be well cared for by repeated aspiration by means of urethral catheter introduced through the nostril and into the trachea and upper bronchial tree. The technic described is simple and one that any doctor can master with a little practice and patience. The value of repeated aspirations, attempting to keep the tracheobronchial tree free of mucus, is stressed. Using the catheter technic repeated aspirations at frequent intervals can be done without fear of trauma.

The following contraindications are listed: 1. Pronounced local disease of larynx; 2. Marked glottic spasm which calls for bronchoscopy or insertion of a Magill tube; 3. Obstruction or gross purulent infection of nasal passage—here the catheter may be inserted through the mouth. 4. Severe coughing, straining or struggling provoked by attempted insertion of catheter in a patient in whom increased intracranial pressure may be dangerous, i.e. cerebral hemorrhage, brain tumor. 5. If catheter aspiration proves ineffectual in removing obstruction, bronchoscopy and aspiration under direct vision is indicated.

Asphyxia by accumulating tracheobronchial secretion is a frequent complication and may cause symptoms and death in many common medical diseases and emergencies. Early recognition and frequent, adequate tracheobronchial aspirations will save many lives.

Ten cases illustrating the immediate life-saving effect of this procedure are reported.—H.F.S.

\* \* \*

### Salivary Gland Tumors

*Salivary Gland Tumors of the Submaxillary Gland Associated with Calculi.* By Ephraim L. Manning and Maurice A. Michael, Ann. O., R., L., 59, 141-145, Mar., 1950.

On diagnosing a neck swelling as an affection of

the submaxillary gland, we first think of an obstructing calculus or an infection, or both, and usually dismiss the diagnosis of tumor quickly, especially if a calculus can be demonstrated by palpation and x-ray examination. However one must consider salivary gland tumor (so-called mixed tumor) of the submaxillary gland even if calculi can be demonstrated.

The term "mixed tumor" applied to these neoplasms was originally proposed by Minssen in 1874, but they are not teratomas since teratomas possess definite tissues forming atypical structures and rudimentary organs. These neoplasms are generally believed to be derived from epithelium and thus are not "mixed tumors."

The main element of the salivary gland tumor is a polymorphous epithelial cell which forms into strands, alveoli and tubular structures or masses closely arranged or scattered in the surrounding tissue. The cell itself may be round, stellate, cuboidal, columnar or spindle shaped. Other than the cell, the most characteristic structure is an excess of mucoid tissue which intermingles with the supporting stroma and is believed to be a product of the neoplastic cells.

Salivary gland tumors occur at all ages, with an average age of onset of apparently 35 to 40 years, and last on the average about six to nine years. They occur about equally in males and females, and in the salivary glands occur chiefly in the parotid gland (90.6 per cent with, in order of frequency, next the submaxillary (8.8 per cent), and then sublingual gland (0.6 per cent). However, they also appear in the palate, cheek, lips, tongue, pharynx, and nares.

The usual history is of a previously quiescent nodule in or over the periphery of one of the larger salivary glands, growing slowly, taking about five years to reach the size of a walnut and about 10 years to reach the size of a lemon. These tumors have a marked tendency to recur after operation because of the difficulty of removing all portions of the tumor, especially in the parotid gland. Malignant types of these tumors do occur and invade adjacent structures, and there have been many cases of metastasizing mixed tumors, although this occurs infrequently.

Salivary gland tumors are resistant to irradiation and surgical excision is the accepted treatment.

Calculi are frequently found in glandular tumors due to stasis of secretions and it might be expected that if a salivary gland tumor should be found with calculi it would be due to this cause.—E.L.G.

Annual meeting, Kansas Medical Society, May 14-17, 1951, Topeka.



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Surgery of Colon & Rectum, One Week, starting April 9, May 14.

Basic Principles in General Surgery, Two Weeks, starting April 2.

Fractures & Traumatic Surgery, Two Weeks, starting June 18.

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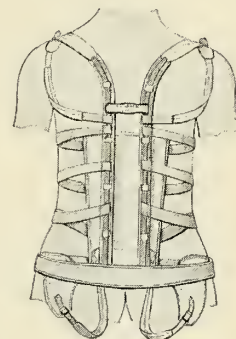
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## BOOK REVIEWS

*The Auditory Clinic.* By Moe Bergman. Published by Audiology Foundation, Chicago. 107 pages, 12 illustrations. Price \$1.00.

This monograph is presented as a guide and contains suggestions of ways and means for organizing an ideal audiology clinic, in which the program of auditory rehabilitation includes the cooperation of the otologist, psychiatrist, psychologist, social worker, audiologist and instructors of speech, speech reading and auditory training.

The Veterans Administration Auditory Rehabilitation Clinic in New York has been used as the "pilot" unit for the book. Details of construction are offered for building sound proof testing rooms. Lists of equipment essential for testing hearing through pure tone, speech, masking and galvanic skin response are given, with suggestions for assembly.

Brief discussions were presented on the personnel of the audiology clinic, duties of each person, the continual need for complete cooperation of the staff, and re-evaluation of the daily programs. True interest in the individual was stressed, and repeated emphasis was made on the need for detailed planning and study of the instructional program, of the area to be serviced, and of the types of programs to be presented, as well as of plans for architectural acoustics.

The author did not attempt to present specific communicative skills, techniques for testing hearing, or selection of hearing aids. He has presented organized information for planning a clinic for the rehabilitation of the acoustically handicapped.—B.J.M.

*The Antibistamines—Their Clinical Application.* By Samuel M. Feinberg, M.D., Saul Malkiel, M.D., and Alan R. Feinberg, M.D. Published by Year Book Publishers, Inc., Chicago. 291 pages, 27 illustrations. Price \$4.00.

This timely volume is divided into two sections, the first embracing experimental studies and the second clinical observations. The authors have further divided the book into 10 parts, the first five covering the experimental data on histamine, the chemistry, pharmacology, and bioassay in man of the antihistamines, and anaphylaxis. The next five parts relate to clinical studies of respiratory allergy, dermatoses, miscellaneous manifestations, including collagen diseases, tuberculosis, motion sickness, the common cold, and radiation sickness, and finally the

administration, dosage and toxicology of the antihistaminics. An appendix lists the proprietary antihistaminic preparations.

The first section reflects adequately the background for experimental work in the field, but is more an introduction than a reference for research. The second section is marked by conservatism in the reports of the authors. They conclude that the therapeutic usefulness of the antihistamines is predominantly in the control of sneezing and the rhinorrhea of hay fever. They stress the limitations of the antihistamines and discourage their use in the treatment of asthma, and as the sole agents in the control of the allergic syndrome. The over-the-counter sale of the less potent drugs is condemned.

This volume is well organized and presented, and includes an imposing bibliography of 586 items. The opinions stated are confirmed and well documented. The application of the material included in this book should be invaluable to the clinician and should perhaps curtail the indiscriminate use and abuse of the antihistamines in the hospital and in general practice.—D.H.D.

### Mental Health Grants to Kansas

Three Kansas institutions were awarded grants which total \$78,175 for mental health training for psychiatrists, psychologists, nurses, social workers and medical students, according to a recent announcement from the Federal Security Agency. The funds are part of a total of \$1,915,708 allocated for the purpose by the Public Health Service, National Institute of Mental Health.

The University of Kansas will receive \$31,592 for clinical psychology, psychiatric social work and undergraduate psychiatry, the Menninger Foundation, Topeka, was awarded \$36,927. for graduate psychiatry and clinical psychology, and the Wichita Guidance Center was granted \$9,656 for clinical psychology.

The mental health training program was initiated in 1947 and was expanded in 1949. Training grants have been given to institutions in 32 states.

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## *Relationship of Stress to Autonomic Lability*

Studies in psychosomatics have shown that functional disorders often are a result of the patient's inability to adjust to emotionally stressful situations (stressor factors).

Nervous tension and chronic anxiety, discharged through a labile Autonomic Nervous System, can cause somatic disturbance.<sup>1,2</sup> Such states may involve any one of the organ systems or several at one time.<sup>1,3</sup> The outline below is designed to relate gastrointestinal and cardiovascular symptomatology to the exaggerated response of the autonomic nervous system.

	Physiologic Effects of Autonomic Discharge	
	Sympathetic	Parasympathetic
Gastro- intestinal System	Hypomotility Intestinal Atony Hyposecretion Reduced salivation	Hypermotility Gastrointestinal spasm Hypersecretion
Cardio- vascular System	Rapid heart rate Peripheral vaso- constriction	Slow heart rate Vasodilatation
Functional Manifesta- tions	Palpitation Tachycardia Elevated blood pressure Dry mouth and throat	Heartburn Nausea-vomiting Low blood pressure Colonic spasm

The data here tabulated is from references 3,4,5,6,7, given below.

When the clinical picture is suggestive of functional disorder, the diagnosis is supported by the presence of the following indications of autonomic lability:

Variable Blood Pressure  
Body Temperature Variations  
Changing pulse rate  
Deviations in B. M. R.  
Exaggerated Cold Pressure Reflex  
Oculo-Cardiac Reflex Abnormalities  
Glucose Tolerance Alterations

Therapy in these cases is directed toward: 1) relieving the somatic disturbance to prepare the patient for psychotherapy\*; 2) guidance in making adjustment to stressful situations and correction of unhealthy attitudes.

\*Drug treatment using adrenergic and cholinergic blocking agents in conjunction with sedatives, 8,9,10.

1. Ebaugh, F.: Postgrad. Med. 4: 208, 1948. 2. Wilbur, D.: J.A.M.A. 147: 1199, 1949. 3. Williams, E. and Carmichael, C.: J. Nat'l. Med. Assoc. 42: 32, 1950. 4. Goodman, L. and Gilman, A.: The Pharmacological Basis of Therapeutics, The Macmillan Co., 1941. 5. Katz, L. et al: Ann. Int. Med. 27: 261, 1947. 6. Weiss, E. et al: Am. J. Psychiat. 107: 264, 1950. 7. Alvarez, W.: Chicago Med. Soc. Bulletin, 581, 1950. 8. Rakoff, A.: A Course in Practical Therapeutics, Williams and Wilkins, 1948. 9. Karnosh, L. and Zucker, E.: A Handbook of Psychiatry. C. V. Mosby Co., 1945. 10. Harris, L.: Canad. M.A.J. 58: 251, 1948.

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Vol. LII

APRIL, 1951

No. 4

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## *Greetings*

A most cordial invitation to be present at the 92nd annual meeting of the Kansas Medical Society, to be held at Topeka, May 14-17, 1951, is extended by the hosts, members of the Shawnee County Medical Society.

Our local committees have been meeting regularly for several months to assure a scientific program of interest to every physician in the state and to provide entertainment that will make the session a pleasant one. All of the usual features of an annual meeting will be included, the banquet, round table luncheons, scientific and technical exhibits, golf tournament and skeet shoot, tournament banquet, and meetings of specialty societies.

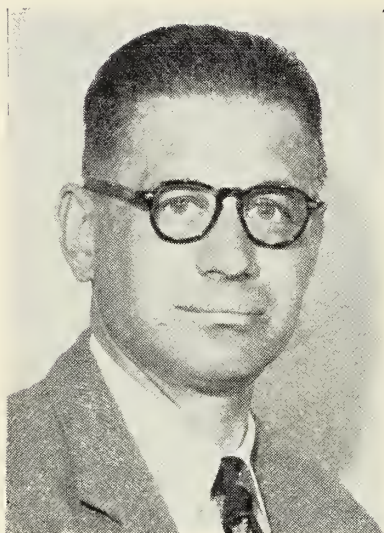
The annual meeting of the Woman's Auxiliary to the Kansas Medical Society will be held in Topeka on the same dates.

We feel that attendance at this session will be profitable for all Kansas physicians and we extend a most cordial welcome to Topeka.

DON C. WAKEMAN, M.D., President

Shawnee County Medical Society

## *Guest Speakers*



ETHAN ALLAN BROWN, M.D.

*Boston, Massachusetts*

Graduate, St. Mary's Hospital Medical School, London, England, 1935; Lecturer in Allergy, Tufts College Medical School; Physician-in-chief, Allergy Section, Boston Dispensary Unit, New England Medical Center; Fellow, American College of Allergists; Editor, *Annals of Allergy*.

Specialty: Internal Medicine; Allergy.



CHARLES HOYT BURNETT, M.D.

*Dallas, Texas*

Graduate, University of Colorado School of Medicine, 1937; Professor and Chairman of Department of Internal Medicine, Southwestern Medical School of the University of Texas; Chief, Medicine Service, Parkland Hospital, Dallas; Diplomate, American Board of Internal Medicine; Fellow, American Society for Clinical Investigation, Association for Study of Internal Secretions, American Federation for Clinical Research, New York Academy of Science; Major, Army Medical Corps, 1942-1945; Member, Board for Study of Severely Wounded—Mediterranean Theatre of Operations, 1944.

Specialty: Internal Medicine and Metabolic Diseases.



**TULLOS OSWELL COSTON, M.D.***Oklahoma City, Oklahoma*

Graduate, Johns Hopkins University Medical School, 1930; Associate Professor of Ophthalmology, University of Oklahoma School of Medicine; Formerly Member of Staff of Wilmer Institute; Diplomate, American Board of Ophthalmology; Fellow, American Academy of Ophthalmology and Otolaryngology.

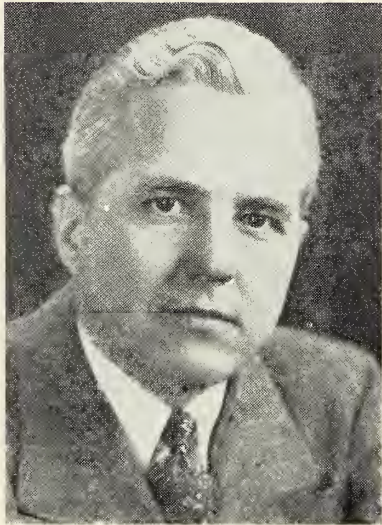
Specialty: Ophthalmology.

**STUART CHESTER CULLEN, M.D.***Iowa City, Iowa*

Graduate, University of Wisconsin Medical School, 1933; Professor of Surgery, Chairman Division of Anesthesiology, Iowa College of Medicine and Hospitals; Diplomate, American Board of Anesthesiology; Associate Editor, Journal of Anesthesiology; Editor, Anesthesia Section, Year Book of General Surgery.

Specialty: Anesthesiology.





WILLIAM JAMES ENGEL, M.D.

*Cleveland, Ohio*

Graduate, University of Kansas School of Medicine, 1926; Urologist, Cleveland Clinic Foundation and the Bunts Educational Institute; Diplomate, American Board of Urology; Fellow, American College of Surgeons, American Association of Genito-Urinary Surgeons, American Urological Association; Captain, U. S. Navy, World War II.

Specialty: Urology.



THOMAS FRANCIS FRAWLEY, M.D.

*Boston, Massachusetts*

Graduate, University of Buffalo School of Medicine, 1944; Research Fellow in Medicine, Harvard Medical School; Assistant in Medicine, Peter Bent Brigham Hospital, Boston; Assistant Professor of Medicine, Albany Medical College, Albany, New York; Director, Division of Endocrinology and Metabolism, Albany Hospital.

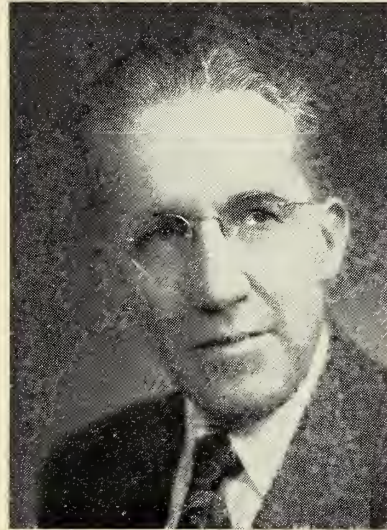
Specialty: Internal Medicine and Endocrinology.



**NYMPHUS FREDERICK HICKEN, M.D.***Salt Lake City, Utah*

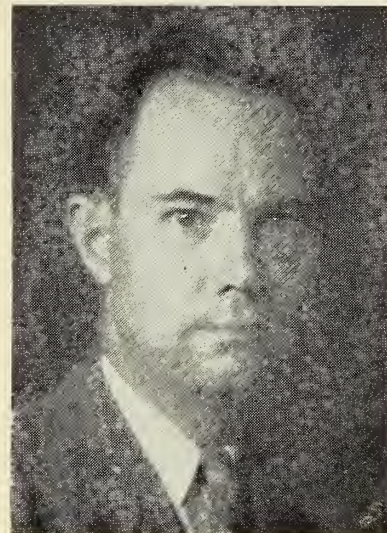
Graduate, University of Pennsylvania School of Medicine, 1929; Associate Professor of Clinical Surgery, University of Utah Medical College; Surgeon, Latter Day Saints Hospital, Salt Lake City; Surgical Consultant, U.S. Veterans Hospitals; Diplomate, American Board of Surgery; Fellow, American College of Surgeons, International College of Surgeons; Founder-Member, Southwestern Surgical Congress.

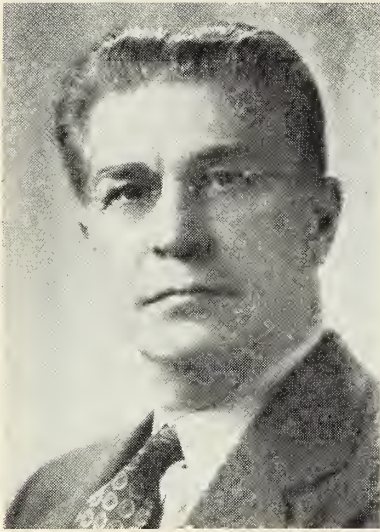
Specialty: General Surgery.

**ROBERT LAWRENCE JACKSON, M.D.***Iowa City, Iowa*

Graduate, University of Michigan Medical School, 1934; Associate Professor of Pediatrics, State University of Iowa Medical School; Diplomate, American Board of Pediatrics; Fellow, Central Society for Clinical Research, American Academy of Pediatrics, American Pediatric Society, American Diabetes Association, Iowa Pediatric Society; Member, Sigma Xi.

Specialty: Pediatrics.





ROBERT ARTHUR KEHOE, M.D.

*Cincinnati, Ohio*

Graduate, University of Cincinnati College of Medicine, 1920; Director, Kettering Laboratory, Professor of Industrial Medicine, Director, Institute of Industrial Health, University of Cincinnati; Medical Consultant to Surgeon General; National Councilor, Ohio State University Research Foundation; Vice Chairman, A.M.A. Council on Industrial Health; Member, American Association of Industrial Physicians and Surgeons, American Association for the Advancement of Science; Past President, American Industrial Hygiene Association.

Specialty: Industrial Medicine.



JOHN HARRIS MOORE, M.D.

*Grand Forks, North Dakota*

Graduate, Northwestern University Medical School, 1917; Chief of Obstetrics and Gynecology, Grand Forks Deaconess Hospital; Staff Member, St. Michael's Hospital; Chairman, Grand Forks Clinic; Diplomate, American Board of Obstetrics and Gynecology; Fellow, American College of Surgeons, American Gynecological Society, American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, Chicago Gynecological Society; Past President, Central Association of Obstetricians and Gynecologists.

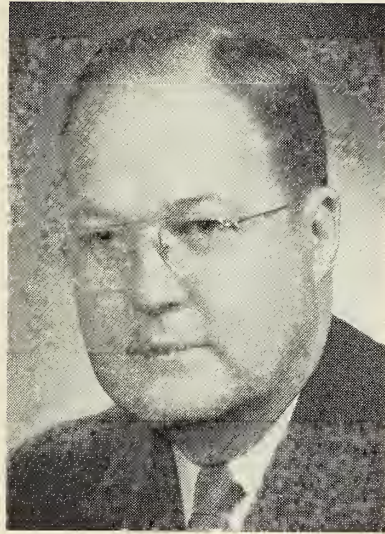
Specialty: Obstetrics and Gynecology.



**CLYDE LAMB RANDALL, M.D.***Buffalo, New York*

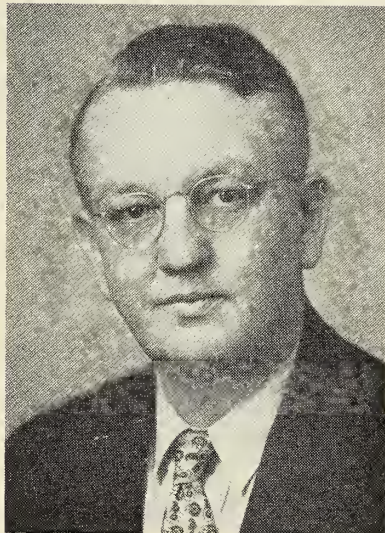
Graduate, University of Kansas School of Medicine, 1931; Professor of Obstetrics and Gynecology, University of Buffalo; Head, Department of Obstetrics and Gynecology, Buffalo General Hospital; Member, New York State Board of Medical Examiners; Diplomate, American Board of Obstetrics and Gynecology; Fellow, American Association of Obstetricians, Gynecologists and Abdominal Surgeons.

Specialty: Obstetrics and Gynecology.

**JOHN RUDOLPH SCHENKEN, M.D.***Omaha, Nebraska*

Graduate, State University of Iowa College of Medicine, 1928; Pathologist, Nebraska Methodist Hospital and Children's Hospital, Omaha, Nebraska; Professor of Pathology, University of Nebraska; Fellow, American Association of Pathologists and Bacteriologists, College of American Pathologists, American Society of Clinical Pathologists; Contributing Author, Anderson's Textbook on Pathology and Pullen's Textbook, "Communicable Diseases."

Specialty: Pathology.





ALBERT CHESTERFIELD STUTSMAN, M.D.  
*St. Louis, Missouri*

Graduate, Department of Medicine, University of Virginia, 1931; Instructor in Clinical Otolaryngology, Washington University School of Medicine; Assistant Otolaryngologist at Barnes Hospital and St. Louis Children's Hospital; Chairman, Department of Otolaryngology at St. Louis County Hospital; Bronchoscopist at Jewish Hospital and Koch Hospital; Diplomate, American Academy of Otolaryngology.

Specialty: Otolaryngology.

## *Annual Banquet*

Topeka High School Auditorium, Tenth and Taylor Streets

*Presiding: F. R. Croson, M.D., Clay Center, Kansas*

The program will consist of a color film travelogue, "Holiday in France," presented by Mr. Robert Friars, Evanston, Illinois. Widely known as a humorist narrator, Mr. Friars has appeared in most major auditoriums in the country. His pictures of France include views of Paris by day and night, with fashion shows at the Molyneux and Schiaparelli salons, Normandy, Brittany, the Riviera, and the French Alps.

Music by the Strolling Troubadours



## *Schedule of Events*

### 92nd ANNUAL SESSION

Topeka, May 14, 15, 16, 17, 1951

#### Sunday, May 13

- 12:30 Annual Meeting, Board of Directors, Kansas Physicians' Service  
(Blue Shield)

Kansan Hotel, Indian Room

Luncheon, business session, election of officers.

#### Monday Morning, May 14

- 10:00 Practice Rounds, Kansas Medical Golfing Association  
White Lakes Country Club, South of Topeka on Highway 75, East Side of Highway
- 10:00 Practice Shooting, Kansas Medical Skeet and Trapshooting Association  
Topeka Gun Club, Six Miles East of Topeka on Highway 40, North Side of Highway

#### Monday Afternoon, May 14

- 1:00 Competitive Golfing, Kansas Medical Golfing Association  
White Lakes Country Club, South of Topeka on Highway 75, East Side of Highway
- 1:30 Competitive Shooting, Kansas Medical Skeet and Trapshooting Association  
Topeka Gun Club, Six Miles East of Topeka on Highway 40, North Side of Highway

#### Monday Evening, May 14

- 6:00 Cocktails  
White Lakes Country Club, South of Topeka on Highway 75, East Side of Highway
- 7:00 Tournament Banquet  
White Lakes Country Club, South of Topeka on Highway 75, East Side of Highway  
Awarding of prizes for golf and trap shoot  
Election of officers

**Tuesday Morning, May 15**

8:00 Blue Shield Physicians Relations Breakfast

Kansan Hotel, Walnut Room

8:00 Registration

Municipal Auditorium, South Entrance

Open 8:00 A.M. to 5:00 P.M.

Opening of Scientific and Technical Exhibits

**FIRST GENERAL SESSION**

Municipal Auditorium, Assembly Room

*Presiding: Harold V. Holter, M.D., Kansas City, Kansas*

9:20 Address of Welcome

*Don C. Wakeman, M.D., Topeka, Kansas  
President, Shawnee County Medical Society*

9:30 Office Gynecology

*John Harris Moore, M.D., Grand Forks, North Dakota*

This discussion places emphasis on some common gynecological complaints which can be treated very satisfactorily in the office of the private practitioner.

10:00 One-Stage Suprapubic Prostatectomy

*William James Engel, M.D., Cleveland, Ohio*

The value of suprapubic prostatectomy has been proven by many years of experience. With the advent of more recent operations for benign prostatic hypertrophy we may have lost sight of the advances made in the suprapubic operation. This paper will summarize these advances and point out certain advantages of this operation.

10:30 Intermission to Visit Exhibits

10:45 ACTH and Cortisone in General Practice

*Thomas Francis Frawley, M.D., Boston, Massachusetts*

There are certain basic physiological principles underlying the application of these agents in general medicine. These are concerned primarily with the metabolic, hormonal and electrolyte effects which are produced. Inasmuch as these effects also contribute largely to the complications and untoward effects associated with ACTH and cortisone therapy, they will be discussed in some detail. The recognition and prevention of these untoward effects will also be considered.

11:15 The Field of Allergy

*Ethan Allan Brown, M.D., Boston, Massachusetts*

The term "allergy" is now used to define a group of phenomena including anaphylaxis, atopic conditions, such as hay fever, bronchial asthma, eczema and other syndromes associated with reaginic antibodies, contact dermatitis, drug allergy, foreign protein reactions, and physical allergy. Within these limits the field of allergy is easily defined and the possibility of an allergic cause can be properly evaluated. The ubiquitous nature of the allergic reaction is stressed.



## Tuesday Morning, May 15—(Continued)

### 12:15 Round Table Luncheon

Jayhawk Hotel, Roof

*Presiding: N. C. Siebert, M.D., Wichita, Kansas*

#### Question and Answer Period

Panel of Guest Speakers: Ethan Allan Brown, M.D., Boston, Massachusetts  
 Stuart Chester Cullen, M.D., Iowa City, Iowa  
 William James Engel, M.D., Cleveland, Ohio  
 Thomas Francis Frawley, M.D., Boston, Massachusetts  
 Robert Lawrence Jackson, M.D., Iowa City, Iowa

### 12:15 E.E.N.T. Luncheon

Kansan Hotel, Indian Room

*Presiding: Ralph E. Cheney, M.D., Salina, Kansas*

#### Question and Answer Period

Panel of Guest Speakers: Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma  
 Albert Chesterfield Stutsman, M.D., St. Louis, Missouri

## Tuesday Afternoon, May 15

### SECOND GENERAL SESSION

Municipal Auditorium, Assembly Room

*Presiding: Kenneth J. Bierlein, M.D., Pittsburg, Kansas*

### 2:00 Use of Depressant Drugs in Premedication and in Postoperative Period

*Stuart Chester Cullen, M.D., Iowa City, Iowa*

All of the depressant drugs used have specific functions dependent upon their pharmacologic properties, and it is important that they be selected according to their capabilities. By so doing, many of the undesirable effects can be minimized or eliminated and beneficial effects obtained. A study of the use of depressant drugs in the postoperative period reveals some very interesting data which will be reported.

### 2:30 Personalized Pre-Partum Care

*John Harris Moore, M.D., Grand Forks, North Dakota*

This subject deserves emphasis first for the welfare of the patients and second because it can serve as a great deterrent to a socialized system of medical practice.

### 3:00 Infant Feeding

*Robert Lawrence Jackson, M.D., Iowa City, Iowa*

Nutritional knowledge has increased rapidly in recent years, requiring many changes in our methods of feeding infants. The feeding of prematurely born and full-term infants will be discussed, and the importance of breast feeding will be re-emphasized.

## Tuesday Afternoon, May 15—(Continued)

- 3:30 Intermission to Visit Exhibits
- 3:45 Congenital Anomalies of the Genito-Urinary Tract as a Cause of Obscure Disease  
*William James Engel, M.D., Cleveland, Ohio*  
 There are many types of congenital anomalies of the genito-urinary tract. Often they are not apparent but may be the cause of obscure and puzzling symptoms. This paper will call attention to some of these and their diagnostic features.
- 4:15 The Treatment of Bronchial Asthma (Excluding the Use of ACTH and Cortisone)  
*Ethan Allan Brown, M.D., Boston, Massachusetts*  
 The treatment of bronchial asthma may vary from the simple administration of one drug to the most complex situation with which the general practitioner can be faced. Although ACTH and Cortisone have revolutionized the treatment of status asthmaticus, nevertheless, in patients in whom these drugs are contraindicated, a knowledge of other means of relieving bronchospasm is required knowledge for every practicing physician. Not only must the bronchospasm be relieved, but the patient must be brought into physiological balance by every means at the physician's disposal.

## Tuesday Evening, May 15

- 6:30 House of Delegates Dinner and Meeting  
 Jayhawk Hotel, Roof
- 7:00 Dinner and Meeting, Kansas Radiological Society  
 Jayhawk Hotel, Room 300  
*Presiding: Leland F. Glaser, M.D., Hutchinson, Kansas*

## Wednesday Morning, May 16

- 8:00 Breakfast and Meeting, Kansas Society of Pathologists  
 Jayhawk Hotel, Directors' Room
- 8:30 Registration  
 Municipal Auditorium, South Entrance  
 Open 8:30 A.M. to 5:00 P.M.  
 Opening of Scientific and Technical Exhibits

### THIRD GENERAL SESSION

- Municipal Auditorium, Assembly Room  
*Presiding: Thomas G. Orr, Jr., M.D., Kansas City, Kansas*
- 9:00 Recent Advances in ACTH and Cortisone Therapy  
*Thomas Francis Frauley, M.D., Boston, Massachusetts*  
 In an occasional patient the disease fails to respond to ACTH or cortisone due to inadequate dosage, unresponsiveness of the adrenal cortex, local



## Wednesday Morning, May 16—(Continued)

tissue destruction of the injected material, or disease refractoriness. Improvements in preparing these hormones and in methods of administering these materials have reduced the occurrence of failures considerably. The use of ACTH intravenously, ACTH from different animal sources, oral cortisone and Compound F as well as newer steroid preparations which have been proposed as being effective in treating various diseases will be discussed.

### 9:30 Recent Advances in Anesthesiology

*Stuart Chester Cullen, M.D., Iowa City, Iowa*

This will be a discussion of the introduction into clinical anesthesia of new drugs such as curare, revival of the use of older technics such as the non-rebreathing technic, and a delineation of some of the contributions made by the basic sciences which have influenced the choice and conduct of anesthesia in clinical practice.

### 10:00 The Management of Acute and Chronic Intestinal Obstructions

*Nymphus Frederick Hicken, M.D., Salt Lake City, Utah*

Intestinal obstructions account for an extremely high morbidity and mortality in every hospital. Diagnosis is difficult, and treatment often disappointing. Some of the problems to be discussed are: the physiological disturbances which obstructions produce and the methods employed in their correction; the differentiation between organic and neurogenic types of obstruction; the determinations between the viable and non-viable gut; the role of antibiotics and the electrolytes in the treatment of obstructions; factors involved in selecting the proper remedial operation.

### 10:30 Intermission to Visit Exhibits

### 10:45 Rheumatic Fever in Childhood

*Robert Lawrence Jackson, M.D., Iowa City, Iowa*

Current concepts of the diagnosis and treatment of rheumatic fever will be discussed. Differences of opinion with regard to diagnosis and treatment are to be expected until we have additional knowledge.

### 11:15 Essential Thrombocytopenic Purpura

*John Rudolph Schenken, M.D., Omaha, Nebraska*

The discussion is to cover the etiology, pathology, clinical laboratory diagnosis and clinical manifestation and treatment of primary thrombocytopenic purpura. Special emphasis is to be placed on the differentiation between this disease and the secondary thrombocytopenic purpuras which occur much more commonly than the primary disease.

### 12:15 Round Table Luncheon

Jayhawk Hotel, Roof

*Presiding: H. Preston Palmer, M.D., Scott City, Kansas*

#### Question and Answer Period

Panel of Guest Speakers: Charles Hoyt Burnett, M.D., Dallas, Texas

Stuart Chester Cullen, M.D., Iowa City, Iowa

Thomas Francis Frawley, M.D., Boston, Massachusetts

Nymphus Frederick Hicken, M.D., Salt Lake City, Utah

Robert Lawrence Jackson, M.D., Iowa City, Iowa

Clyde Lamb Randall, M.D., Buffalo, New York

John Rudolph Schenken, M.D., Omaha, Nebraska

### Wednesday Morning, May 16—(Continued)

#### 12:15 E.E.N.T. Luncheon

Kansan Hotel, Indian Room

*Presiding: George F. Gsell, M.D., Wichita, Kansas*

#### Question and Answer Period

Panel of Guest Speakers: Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma

Albert Chesterfield Strutsman, M.D., St. Louis, Missouri

### Wednesday Afternoon, May 16

#### FOURTH GENERAL SESSION

Municipal Auditorium, Assembly Room

*Presiding: Frederick E. Wrightman, M.D., Sabetha, Kansas*

#### 2:00 The Prevention of Abortion

*Clyde Lamb Randall, M.D., Buffalo, New York*

Few circumstances actively cause abortion, but many factors interfere with decidual, placental or fetal development and in a somewhat passive manner eventually terminate pregnancy. Preconceptional and prenatal management should strive to assure indicated therapy at the time it is most effective.

#### 2:30 Current Concepts of the Mechanisms and Management of Edema

*Charles Hoyt Burnett, M.D., Dallas, Texas*

A wide variety of drugs and therapeutic procedures are currently being employed in the management of edema, the rational use of which requires an understanding of the basic mechanisms of edema formation. These will be discussed, as well as the advantages and disadvantages, and possible dangers, of the various therapeutic procedures.

#### 3:00 Intermission to Visit Exhibits

#### 3:15 Tumor Clinic—Discussion of Cases

Panel of Guest Speakers: John Rudolph Schenken, M.D., Omaha, Nebraska, Pathologist, Moderator

Charles Hoyt Burnett, M.D., Dallas, Texas, Internist

Nymphus Frederick Hicken, M.D., Salt Lake City, Utah, Surgeon

Clyde Lamb Randall, M.D., Buffalo, New York, Gynecologist

Galen Martin Tice, M.D., Kansas City, Kansas, Radiologist



## Wednesday Evening, May 16

### 7:30 Annual Banquet

Topeka High School Auditorium, Tenth and Taylor Streets

*Presiding: F. R. Croson, M.D., Clay Center, Kansas*

Music by Strolling Troubadours

Color Film Travelogue, "Holiday in France"—Mr. Robert Friars, Evanston, Illinois

## Thursday Morning, May 17

### 8:30 Registration

Municipal Auditorium, South Entrance

Open 8:30 A.M. to Noon

Opening of Scientific and Technical Exhibits

## FIFTH GENERAL SESSION

Municipal Auditorium, Assembly Room

*Presiding: Wendell A. Grosjean, M.D., Winfield, Kansas*

### 9:00 Difficult Clinical Diagnostic Lesions of the Gastro-Intestinal Tract

*John Rudolph Schenken, M.D., Omaha, Nebraska*

This will be a discussion of the difficult clinical diagnostic problems of pathology existent in a gastro-intestinal tract and to cover the entire gastro-intestinal tract in regard to many of the peculiar difficult diagnostic problems which occur from time to time and often lead to confusion of the case.

### 9:30 The Prophylaxis of Gynecologic Malignancies

*Clyde Lamb Randall, M.D., Buffalo, New York*

In the management of benign gynecologic lesions, we should always be mindful of the desirability of preventing the eventual development of genital cancer. Selection of the treatment or surgical procedure most likely to reduce the ultimate incidence of malignancy seems an obligation equal to the recognition of cancer at an early curable stage.

### 10:00 Industrial Medicine and the General Practitioner

*Robert Arthur Kehoe, M.D., Cincinnati, Ohio*

The role of the general practitioner in the field of industrial health will be suggested. The nature of the medical problems, the general methods which seem applicable on the basis of experience, the special knowledge which is required, and the means by which such knowledge may be acquired and applied will be outlined.

### 10:30 Intermission to Visit Exhibits

### 10:45 Surgical Diseases of the Pancreas

*Nymphus Frederick Hicken, M.D., Salt Lake City, Utah*

The pancreas can be affected by inflammatory, neoplastic and degenerative diseases. Which of these affectations should be treated conservatively and which present surgical problems will be discussed. The discussion will include acute and chronic pancreatitis; pancreatic lithiasis, cysts pancreas, adenomas pancreas, and carcinomatous involvement.

**Thursday Morning, May 17—(Continued)****11:15 The Indications for Thyroid Medication**

*Charles Hoyt Burnett, M.D., Dallas, Texas*

Although thyroid is extensively employed as a therapeutic agent in a variety of disorders, indications for its use are not always clear cut. An attempt will be made to define those conditions in which thyroid can be expected to be of therapeutic benefit, and to list some conditions in which its use is either of no benefit or is possibly dangerous.

**12:15 House of Delegates Luncheon**

Jayhawk Hotel, Florentine Room

**12:30 Blue Cross Board of Directors Buffet Luncheon**

Kansan Hotel, Roof

**Thursday Afternoon, May 17****SIXTH GENERAL SESSION**

Jayhawk Theatre, Seventh and Jackson

*Presiding: Harry J. Davis, M.D., Topeka, Kansas*

**2:00 Industry and Community Health**

*Robert Arthur Kehoe, M.D., Cincinnati, Ohio*

The importance of industrial health in the United States of America, the hazards thereto and the probable pattern of procedure for the control of such hazards will be the subject of this discussion.

**MAKE HOTEL RESERVATIONS NOW**

**ANNUAL MEETING KANSAS MEDICAL SOCIETY**

**TOPEKA, KANSAS**

**MAY 14-17, 1951**



## *Technical Exhibits*

- |  |   |
|--|---|
| 1. United Medical Equipment Company                          | 37. Sandoz Chemical Works, Inc.                       |
| 2. Ethicon Suture Laboratories, Inc.                         | 38. J. B. Lippincott Company                          |
| 4. Wyeth, Inc.   | 39. A. H. Robins Company, Inc.                        |
| 6. American Optical Company                                  | 40. Philip Morris and Company, Ltd.                   |
| 7. Zemmer Company  | 41. Doho Chemical Corporation                         |
| 8, 9 and 10. Munns Medical Supply Company, Inc.              | 42. Ciba Pharmaceutical Products, Inc.                |
| 11. Goetze-Niemer Company                                    | 43. Westinghouse Electric Corporation, X-ray Division |
| 12. H. G. Fischer and Company                                | 44. Soundsciber Company                               |
| 13 and 14. Sealy Mattress Company                            | 45. A. S. Aloe Company                                |
| 16. Lanteen Medical Laboratories, Inc.                       | 46. William S. Merrell Company                        |
| 17. Winthrop-Stearns, Inc.                                   | 47. Parke, Davis and Company                          |
| 18. Greb X-ray Company                                       | 48. Ortho Pharmaceutical Corporation                  |
| 19. Bilhuber-Knoll Corporation                               | 49. G. D. Searle and Company                          |
| 20. Eli Lilly and Company                                    | 50. S. E. Massengill Company                          |
| 21. Sharp and Dohme, Inc.                                    | 51. Burroughs Wellcome and Company, Inc.              |
| 22. Ayerst, McKenna and Harrison, Ltd.                       | 52. Producers Creamery Company                        |
| 23. American Hospital Supply Corporation                     | 53. W. C. Scott and Company                           |
| 24. General Electric X-ray Corporation                       | 54. C. B. Fleet Company, Inc.                         |
| 25. Medical Protective Company                               | 58. Blue Cross—Blue Shield                            |
| 26 and 27. Mid-West Surgical Supply Company                  | 59. Pet Milk Company                                  |
| 28 and 29. E. R. Squibb and Sons                             | 60. M and R Dietetic Laboratories                     |
| 30. Lederle Laboratories Division, American Cyanamid Company | 61. Coufal-Keleket X-ray Company                      |
| 31. Holland-Rantos Company, Inc.                             | 62. Quinton-Duffens Optical Company                   |
| 32. Continental Casualty Company                             | 63. Commercial Casualty Company                       |
| 33. Smith-Dorsey Company                                     | 64. William P. Poythress and Company                  |
| 34. Physical Medicine Company                                | 67. Medco Products Company                            |
| 35. Mead Johnson and Company                                 | 68. Schering Corporation                              |
| 36. Gray Fox, Inc.   |   |

## *Committee Chairmen*

- |  |   |
|--|---|
| General Chairman—Harry J. Davis, M.D.          | Arrangements and Banquet—Francis T. Collins, M.D. |
| Scientific Program—David E. Gray, M.D.         | Publicity—Donald H. Macrae, M.D.                  |
| EENT Scientific Program—Ralph R. Preston, M.D. | Entertainment—Frederick L. Ford, M.D.             |
| Commercial Exhibits—Paul M. Powell, M.D.       | Reception—Daniel L. Tappen, M.D.                  |
| Scientific Exhibits—Louis Cohen, M.D.          | Auxiliary—Robert E. Pfuetze, M.D.                 |

## *Eye, Ear, Nose and Throat Section*

**Tuesday Morning, May 15**

- 8:00 Registration  
Municipal Auditorium, South Entrance  
Open 8:00 A.M. to 5:00 P.M.  
Opening of Scientific and Technical Exhibits

### FIRST SESSION

Municipal Auditorium, Room 201  
*Presiding: G. O'Neil Proud, M.D., Kansas City, Kansas*

- 9:30 Hoarseness  
*Albert Chesterfield Stutsman, M.D., St. Louis, Missouri*  
The implications of this complaint will be developed along with the diagnostic procedures and the treatment.
- 10:00 Intermission to Visit Exhibits  
*Presiding: Karl W. Stock, M.D., Topeka, Kansas*
- 10:30 Fundus Conditions  
*Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma*  
A number of colored slides of various fundus conditions will be presented.
- 12:15 E.E.N.T. Luncheon  
Kansan Hotel, Indian Room  
*Presiding: Ralph E. Cheney, M.D., Salina, Kansas*  
Panel of Guest Speakers: Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma  
Albert Chesterfield Stutsman, M.D., St. Louis, Missouri

**Tuesday Afternoon, May 15**

### SECOND SESSION

*Presiding: G. O'Neil Proud, M.D., Kansas City, Kansas*

- 2:00 Foreign Bodies in the Air and Food Passages  
*Albert Chesterfield Stutsman, M.D., St. Louis, Missouri*  
A review of the signs and symptoms of foreign bodies in the food and air passages with discussion of diagnosis and treatment will be presented.
- 3:00 Intermission to Visit Exhibits  
*Presiding: Karl W. Stock, M.D., Topeka, Kansas*
- 3:30 Therapy of Ocular Infections  
*Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma*  
The various drugs used in the treatment of external and intraocular inflammatory diseases will be discussed.



## Eye, Ear, Nose and Throat Section—(Continued)

### Wednesday Morning, May 16

#### 8:30 Registration

Municipal Auditorium, South Entrance  
Open 8:30 A.M. to 5:00 P.M.

Opening of Scientific and Technical Exhibits

#### THIRD SESSION

Municipal Auditorium, Room 201

*Presiding: John B. Dixon, M.D., Parsons, Kansas*

#### 9:30 Ocular Emergencies

*Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma*

This paper will be a discussion of conditions requiring immediate treatment (occlusion of central retinal artery or vein, acute glaucoma, acute optic neuritis, spasm of cerebral vessels affecting visual fields, to mention a few).

#### 10:00 Intermission to Visit Exhibits

#### 10:30 1. Epistaxis

*Albert Chesterfield Stutsman, M.D., St. Louis, Missouri*

The importance of this condition along with the diagnosis and adequate treatment will be discussed.

#### 2. Oro-Antral Fistula

*Albert Chesterfield Stutsman, M.D., St. Louis, Missouri*

Oro-antral fistulas can frequently be prevented by the intelligent abstinence of treatment. The fistulas very often result from the over-treatment of the socket. Closure of the fistula is dependent upon the eradication of the lining of the socket, elimination of the infection in the antrum and the use of the flap of mucous membrane as indicated.

#### 12:15 E.E.N.T. Luncheon

Kansas Hotel, Indian Room

*Presiding: George F. Gsell, M.D., Wichita, Kansas*

Panel of Guest Speakers: Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma

Albert Chesterfield Stutsman, M.D., St. Louis, Missouri

### Wednesday Afternoon, May 16

#### FOURTH SESSION

*Presiding: Norton L. Francis, M.D., Wichita, Kansas*

#### 2:00 1. Retrolental Fibroplasia

*Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma*

A discussion of recognition and treatment will be presented.

#### 2. Retinoblastoma

*Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma*

Diagnosis will be discussed and effective treatment presented.

**Eye, Ear, Nose and Throat Section—(Continued)**

3:00 Intermission to Visit Exhibits

3:30 1. Congenital Laryngeal Stridor

*Albert Chesterfield Stutsman, M.D., St. Louis, Missouri*

Congenital laryngeal stridor is not an uncommon diagnosis in infants and small children under two years of age. The diagnosis is simple and the reassurance of the parents is an important part of the treatment.

Deafness in Children

*Albert Chesterfield Stutsman, M.D., St. Louis, Missouri*

The problem of the deafened child is still acute even though we have the benefit of the antibiotics. Deafness resulting from mastoid infections has been greatly reduced since the advent of antibiotics. There are still many cases as the result of repeated infections-in which much can be accomplished by the recognition of this condition and proper treatment.

## **Kansas Medical Society Annual Meetings**

### **1951**

**May 14-17**

**TOPEKA, KANSAS**

### **1952**

**May 5-8**

**KANSAS CITY, KANSAS**



## Round Table Luncheons

### Tuesday, May 15

General Luncheon—*Jayhawk Hotel, Roof*

*Presiding: N. C. Siebert, M.D., Wichita, Kansas*

Panel of Guest Speakers: Ethan Allan Brown, M.D., Boston, Massachusetts

Stuart Chester Cullen, M.D., Iowa City, Iowa

William James Engel, M.D., Cleveland, Ohio

Thomas Francis Frawley, M.D., Boston, Massachusetts

Robert Lawrence Jackson, M.D., Iowa City, Iowa

E.E.N.T. Luncheon—*Kansan Hotel, Indian Room*

*Presiding: Ralph E. Cheney, M.D., Salina, Kansas*

Panel of Guest Speakers: Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma

Albert Chesterfield Stutsman, M.D., St. Louis, Missouri

### Wednesday, May 16

General Luncheon—*Jayhawk Hotel, Roof*

*Presiding: H. Preston Palmer, M.D., Scott City, Kansas*

Panel of Guest Speakers: Charles Hoyt Burnett, M.D., Dallas, Texas

Stuart Chester Cullen, M.D., Iowa City, Iowa

Thomas Francis Frawley, M.D., Boston, Massachusetts

Nymphus Frederick Hicken, M.D., Salt Lake City, Utah

Robert Lawrence Jackson, M.D., Iowa City, Iowa

Clyde Lamb Randall, M.D., Buffalo, New York

John Rudolph Schenken, M.D., Omaha, Nebraska

E.E.N.T. Luncheon—*Kansan Hotel, Indian Room*

*Presiding: George F. Gsell, M.D., Wichita, Kansas*

Panel of Guest Speakers: Tullos Oswell Coston, M.D., Oklahoma City, Oklahoma

Albert Chesterfield Stutsman, M.D., St. Louis, Missouri

# *Woman's Auxiliary to the Kansas Medical Society*

Annual Meeting, May 14-16, 1951

Topeka, Kansas

Monday, May 14

1:00-4:00 Registration, Municipal Auditorium

Tuesday, May 15

9:00-4:00 Registration, Municipal Auditorium

9:30 Pre-convention Board of Directors Meeting, Municipal Auditorium

12:30 Past State Presidents' Luncheon, Colonial Room, Hotel Kansan

2:00-4:00 Tea, Executive Mansion, Eighth and Buchanan Streets

6:30 Dinner, Hotel Jayhawk

Wednesday, May 16

9:00-4:00 Registration, Municipal Auditorium

9:00 General Session, Municipal Auditorium

1:00 Luncheon, Roof Garden, Hotel Kansan

3:30 Post Convention Board Meeting, Mrs. Richard Greer's Home, 1137 MacVicar

7:30 Annual Kansas Medical Society Banquet

## Convention Chairmen

General Convention Co-Chairmen—Mrs. Floyd C. Beelman and Mrs. Byron J. Ashley

Registration and Tickets—Mrs. A. A. Fink

Dinner—Mrs. John E. Crary

Tea—Mrs. Alexander C. Craig

Transportation—Mrs. B. I. Krehbiel

Luncheon—Mrs. Harry J. Bowen

Publicity—Mrs. Robert E. Pfuetze



# *Kansas Medical Assistants' Society*

Annual Meeting, May 13-14, 1951

Kansan Hotel, Topeka, Kansas

All Sessions on Roof Garden, Kansan Hotel

## Sunday, May 13

- 9:00- 2:00 Registration, Mezzanine Floor
- 9:00-11:00 Coffee
- 2:00 Address of Welcome—Harry J. Davis, M.D., Topeka, General Chairman, Kansas Medical Society Annual Meeting
- 2:10 Response—C. H. Benage, M.D., Pittsburg, President-elect, Kansas Medical Society
- 2:15 Insight for the In-Between—Mr. Henry H. Asher, Lawrence, Attorney
- 2:45 The Medical Assistant and the Cancer Problem—Orville R. Clark, M.D., Topeka
- 3:15 Self Examination Cancer Film—Mr. Earl Shipman, Topeka, Division of Cancer Control, Kansas State Board of Health
- 3:30 The Psychology of Good Health for the Medical Assistant—William H. Wood, M.D., Topeka, Topeka State Hospital
- 4:00 Business Meeting and Election of Officers—Presiding, Mrs. Berenice B. Asher, Lawrence, President, Kansas Medical Assistants' Society
- 6:30 Buffet Supper—Entertainment

## Monday May 14

- 9:00-10:00 Registration
- 10:00 Meeting Called to Order—Mrs. Berenice B. Asher, Lawrence, President, Kansas Medical Assistants' Society
- 10:15 Psychosurgery—Its History and Development—Leon L. Bernstein, M.D., Topeka, Chief, Neurological Service and Neurological Surgeon, Winter Veterans Administration Hospital, Topeka  
(Note: This includes a talk and portions of a film of a four and one-half hour operation with the patient speaking while the operation is being performed)
- 11:30 Discussion of Psychosurgery
- 12:30 Luncheon—Speaker on Ceramics
- 2:00 Installation of Officers
- 3:00 Viewing of Scientific Exhibits—Municipal Auditorium, Eighth and Quincy Streets

TELEPHONE NUMBER AT THE AUDITORIUM — 4-7732

## PRESIDENT'S PAGE

Dear Doctor:

In retrospect, one year is a very short time. This is especially true when that year has been filled with a Korean war, a doctor draft, a primary election with three candidates on one ticket and two on the other, a general election and then the following legislative session. All these things interfere so much with carefully laid plans which cannot possibly be executed on account of time.

I firmly believe that I have had the best officers and council any president of our Society has ever enjoyed. The work of all the committees—and they have worked—is a source of joy and satisfaction to all of our membership. My personal thanks go to all of you for the time and effort you have expended in the service of our Society.

Some regret lurks in my mind in turning the leadership of the Kansas Medical Society to my successor, Dr. C. H. Benage of Pittsburg. He is very capable and I am sure will prove a wise leader with excellent judgment and I have no doubt but that the Society will progress and prosper under his leadership, but I do regret that I must turn over to him so much unfinished business, so many things I had planned to do this year.

Our annual meeting is in Topeka, May 14 to 17. The Shawnee County Society has arranged an excellent program. I would like to urge each and every component society to select your delegates now—if you have not already done so—and then see that they represent you at the House of Delegates meetings on Tuesday evening, May 15, and on Thursday afternoon, May 17. These meetings are most important as is the Council meeting following the House of Delegates meeting on Thursday afternoon.

In conclusion, I sincerely thank you for having conferred upon me the greatest honor that any Kansas doctor can possess. It carries a terrific responsibility, so great that it can only be properly appraised in retrospect.

Thank you—all of you—for your valuable help and constructive criticisms which have been cheerfully and freely and wisely given in the interest of the Kansas Medical Society.

Sincerely,

*A. R. Croson, M.D.*



## President



F. R. Croson, M.D., President

The rich, warm personality of Roy Croson, M.D., gave your Society outstanding leadership during the past year. His genuine interest in this world and all that's in it became a stimulus for everyone who worked with him. His presidency brought your Society on a friendlier basis with its neighbors and his vision widened the field of its activities.

His humanity softened the blow of more than one crisis that would have shaken the Society under less inspired direction. The Korean war and resulting mobilization program serves as an outstanding example of this fact. Your president faced this disagreeable situation in a calm and practical manner with the result that the war effort progressed on schedule but not one single other project was left neglected. Committees met, the rural health plan continued and cooperation with the medical school was extended.

Such achievement would have brought credit to any administration but Dr. Croson guided the Kansas Medical Society, in addition to all else, through the most baffling and confused legislative session ever known in the state. His vision for the future of Kansas medicine and his unswerving integrity gave your Society a new horizon. Not in a generation has medicine taken so broad a glance at the future, so definitely a step in the affirmative as

during the year just past. Fulfillment lies ahead but Dr. Croson had the courage to set the course toward progress and for the protection of the people of Kansas, moved ahead. The ultimate history will one day record this as the year of decision, the year Kansas medicine came of age.

## President-Elect

Clarence H. Benage, M.D., of Pittsburg will become president of the Kansas Medical Society in May, the first in many years from the populous, industrialized southeast. His experience in this environment will bring to the Society an outlook that presages a most wonderful year to come. It will be filled with work in many fields, not least among these being efforts to work more closely with labor.

Listing the qualities of leadership to be found in your new president would be to catalogue the virtues desired of one in his high office. Among the many, a few stand out even above the other attributes that might be named. It is a relatively rare physician who, becoming eminently successful in this art, is also admired for his achievements in the business world, but Dr. Benage possesses unusual ability in both fields. His is that rare and greatly desired balance of the artistic, scientific and the practical. This combination will direct your Society toward new projects in the year to come.

Dr. Benage comes to the presidency with many years of experience in Society activities during which time he has again and again demonstrated superior qualities of leadership. He served on the Council for six years and then advanced from second vice president to his present position. He has an uncanny ability to equitably resolve differences of opinion and a sure insight into fundamentals. These talents combine with a gift for self expression to make your new president beautifully qualified for the year ahead. The Society looks forward toward a productive experience and pledges its continued support to the many activities that will be carried into reality.



Clarence H. Benage, M.D., President-Elect

## *Councilor Reports*

### FIRST DISTRICT

*To the House of Delegates:*

The First District has been rather quiet but busy this year. There have been several young progressive doctors start out in this territory, and the armed services have called a few. A few localities are still in need of doctors. Hospital facilities have been expanded, and plans are progressing for further increase in the number of hospital beds.

We have had one district meeting in Centralia which was well attended. The Auxiliary has been very active, especially in their work on public relations. There is still a need for a little better organization in a couple of counties in the First District, but for the most part the members have been very cooperative and helpful in Society work.

Respectfully submitted,

W. L. ANDERSON, M.D., *Councilor*.

### SECOND DISTRICT

*To the House of Delegates:*

During the past year the second district has gained six doctors. Twenty-two doctors were admitted to the various county societies; during the same period four doctors died, seven were lost by transfer, and five entered the military services. All but one of those entering the services were of the general practice group, so that their loss is the more palpable in the communities from which they were taken.

Meetings are held regularly every month in all but two counties. In these two counties the small number of doctors makes monthly meetings impractical. All the meetings in the other counties attended by the councilor were of uniformly high caliber. Excellent papers were followed by thorough discussion, revealing that the members are keeping abreast of the times by careful reading of current medical literature. It was noted that in each meeting considerable time was given to the study of local economic problems, especially as related to the care of the medically indigent under the various arrangements with their county governments.

During the past year the badly needed hospital in Anderson County was opened in Garnett. It is now in full operation, and has been making satisfactory progress in internal organization and in increased service to the community.

The grievance committee in Wyandotte County, composed of an equal number of doctors and lay-

men, has had nothing of sufficient importance since the last report to call a meeting. A similar committee in Douglas County, hitherto composed entirely of doctors, has recently been enlarged by the appointment of several lay persons.

An inquiry was made throughout the district into the matter of an Emergency and Night Call Service for the purpose of getting a doctor to the patient in any emergency. In every county there is some provision for such a service, the scope of which varies with the size of the community. In the largest county, a number for emergency calls is given at the beginning of the listings of physicians, and a call to that number by a stranger in the community will bring prompt aid. In other counties various hospitals or clinics have been designated as emergency centers, whereas in the smaller communities the local telephone operators are usually able to find a doctor in true American style.

In general, your councilor from the second district is able to report that there exists a truly friendly, cooperative spirit among the doctors, and that a genuine effort is being made to give the public the best possible medical care.

Respectfully submitted,

A. J. RETTENMAIER, M.D., *Councilor*.

### THIRD DISTRICT

*To the House of Delegates:*

This district, which has not infrequently in the past been referred to as the "Stormy Balkans," has portrayed such unusual tranquility that the councilor in the future will reproach anyone who refers to the district with that label.

Our hospitals continue to be maintained at their bed capacity and the bed capacity will be materially improved with the completion of the hospital at Iola, as the Fredonia and Chanute hospitals have been completed.

In the past year I have encountered no criticism of the Blue Cross or Blue Shield, and I am sure that every member in this district wishes to congratulate them on their effective service.

The councilor of this district is of the opinion that the younger members of the Society should be more cognizant of the democratic mechanism of our state Society; that this would precipitate a better understanding of the problems that meet the officers of the Society, and thus make a stronger Kansas Medical Society.

I hope that in the remaining years of my office



as councilor I may be able to stimulate a greater interest by the younger members of our Society.

Respectfully submitted,  
JAMES G. HUGHBANKS, M.D., *Councilor*.

#### FOURTH DISTRICT

*To the House of Delegates:*

The Fourth District has shown a gain in the number of physicians during the past year. This increase, however, is not proportional to the population increase during the same period. A shortage of physicians will become more acute with calls to the service increasing and more people moving into the area as industrial workers or military dependents.

Steps have been taken to increase the number of hospital beds in the district, but most of the plans are on paper. Some actual building will be started within the next year.

A review of county society meetings shows excellent scientific programs and some constructive work along the lines of economic relationships with the public. Continuing study is needed not only to give the public a view of what the physician can accomplish but to make the public realize that health is at least as good an investment as new automobiles, television sets or new refrigerators.

The legislative session has made the Fourth District, as usual, the center of activities for members of the House and the Senate. The Shawnee County Medical Society has done much to help entertain the legislators and make their stay in Topeka a pleasant one.

The past year has been one of progress for medicine in this district, and the prospects for the future are good.

Respectfully submitted,  
FLOYD C. TAGGART, M.D., *Councilor*.

#### FIFTH DISTRICT

*To the House of Delegates:*

There has not been anything of major importance in the Fifth District this year.

The interest in the medical societies, county, district and state, has increased as is obvious by the attendance, and no doubt some of the increase is due to portentous legislation. Also the district post-graduate lectures given under the auspices of the University of Kansas Medical Center have helped to create interest as well as accomplish much professional good.

There is a steady growth in the number of Blue Cross and Blue Shield participants.

The out-patient treatment by the Veterans Ad-

ministration is not favorably received by most of the doctors, due mainly, I think, to the "red tape."

Respectfully submitted,  
L. J. BEYER, M.D., *Councilor*.

#### SIXTH DISTRICT

*To the House of Delegates:*

The overall picture in the Sixth District has changed somewhat since a year ago. The shortage of hospital beds has become quite evident. Although many of the hospitals in this district are planning expansion programs, it appears that there will be an acute shortage of available beds for some time to come. The rapid growth of Wichita as an industrial center has undoubtedly been responsible for the acuteness of this situation.

Being a legislative year, there have been many problems from the state level. The solution of many of these problems has not been settled at the time of this report. We, of this district, have confidence that our legislators will enact laws for the betterment of the people of Kansas and in line with the dignity of our profession.

Respectfully submitted,  
J. V. VAN CLEVE, M.D., *Councilor*.

#### SEVENTH DISTRICT

*To the House of Delegates:*

In my short term as councilor of the Seventh District it would seem that conditions have not changed much in the last year.

Medical society meetings continue regularly over most of the district and are well attended. There have been several consolidated meetings of both a professional and social nature.

Several physician vacancies in and overlapping this district have been filled within the last year both to the satisfaction of the physician and the community.

The hospital situation remains about the same except that one new hospital unit has been added that should adequately care for that area. Also a new clinic group has been created in ideal surroundings with a very extensive equipment and specialist outlay.

Blue Cross and Blue Shield have been opened up in a portion of this district with a very satisfactory enrollment.

Respectfully submitted,  
S. A. ANDERSON, M.D., *Councilor*.

## EIGHTH DISTRICT

*To the House of Delegates:*

Legislative years often make greater demands on the Council than the periods between sessions and this year certainly served as an example for that statement. The Council was frequently called, often on short notice, and many problems were presented for solution. Details of such work will be discussed elsewhere but this one councilor wishes to make just two general observations.

The Council seriously considers problems confronting the Kansas Medical Society and carefully weighs its decisions in an effort to direct medicine toward the greatest possible service to the people. The second point is the necessity for better understanding by the complete membership so more active cooperation can be obtained. This requires considerable time on the part of the councilor but the lack of sufficient effort was well demonstrated by the results of the recent legislative session. A unified medical front could well have altered several issues in the legislature and in the opinion of one councilor, at least, a more complete understanding by the membership would have provided the difference.

Respectfully submitted,

W. A. SMILEY, M.D., *Councilor.*

## NINTH DISTRICT

*To the House of Delegates:*

In the Ninth District there are no county medical societies so to speak. The district, made up of 10 counties in Northwest Kansas, comprises the Northwest Kansas Medical Society. There are too few physicians per county to make county societies worth while.

Medical meetings have been held during the year for the election of officers and the transaction of business. Programs that were held in former years have been largely replaced by the educational circuit course sponsored by the University of Kansas School of Medicine and the Kansas Medical Society. Attendance has been limited chiefly by distance involved, and the responsibilities of practice have kept some from attending these meetings. The programs have been excellent and well chosen. Certainly one cannot overestimate their remarkable educational and social value.

Only slight changes have occurred during the last year in rearrangement of physicians in the Ninth District. Dr. N. K. McLean, specializing in ophthalmology, has started practice in Colby. Dr. W. McDougal, Colby, reserve in the U. S. Army commissioned as lieutenant colonel, was called to active service in March. Dr. Dan Ferguson has established

practice at Bird City. Dr. Joseph W. Pavelsek of Oberlin left the state for practice in Wisconsin.

During the last year new hospitals have opened at Atwood, Oberlin, Norton and Oakley. It is reported that \$25,000 has been appropriated to construct a physician's office with adjacent emergency hospital quarters at Sharon Springs.

The Ninth District with adequate physicians and hospital facilities is rendering excellent medical service without the aid of cults.

Respectfully submitted,

M. J. RENNER, M.D., *Councilor.*

## TENTH DISTRICT

*To the House of Delegates:*

Your councilor had hoped that last year would be one of peace and quiet, undisturbed by threatening legislation or brawls within the medical family.

Our immediate district has lost three men—one to the Army and two are contemplating southern or west coast locations. Unless the military needs are increased we have only a slight shortage of medical men in key spots.

Economically the prospects are for about one-half the normal wheat crop. However, livestock prices are rising and it is thought that community income will be about 80 per cent of last year's.

The Central Kansas Medical Society has been active in that its regular meetings have been well attended, scientific papers much above the average and discussions lively and interesting. The Procurement Committee has had its share of headaches and criticism, but I feel that such a committee will always share an equal popularity with the tax collector. The men on the committee have had a hard task, but most of us feel that the work has been impartial and well considered.

Respectfully submitted,

MURRAY C. EDDY, M.D., *Councilor.*

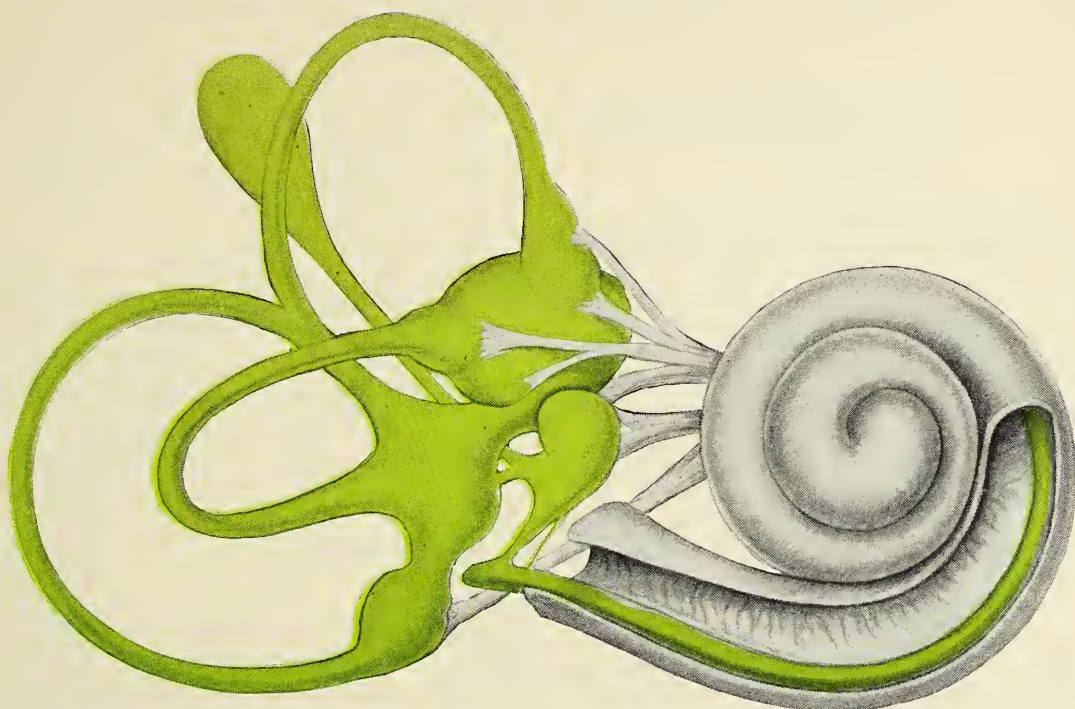
## ELEVENTH DISTRICT

*To the House of Delegates:*

The eleventh district has had four meetings in which the councilor discussed the affairs of the Society with the doctors of the district. One was a called council meeting in Larned and the others have been in conjunction with meetings of the Mid-West Kansas Medical Society. The latter group is composed of physicians in Pratt, Stafford, Barton and Pawnee counties, organized to promote lectures of general interest for the whole district.

In the last 18 months new hospitals have opened or are ready to open in Pratt, Medicine Lodge, Cold-





*Detail of the Labyrinthine Structure*

"The prophylactic value of Dramamine was conclusively demonstrated among 170 passengers who volunteered the information that they were unusually susceptible to motion sickness. . . . There was complete relief (freedom from any signs or symptoms of airsickness) in 152 cases or 89.5 per cent; . . . ."

—Tuttle, A. D.: *Special Breakdown of Case Histories*, presented at the Airlines Medical Directors Association Meeting, New York, N. Y., Aug. 28, 1949.

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water, Greensburg, Kinsley, Larned and LaCrosse. There have been no reports from many of them. The hospitals in Pratt and Greensburg are well filled most of the time.

Respectfully submitted,  
CYRIL V. BLACK, M.D., *Councilor*.

#### TWELFTH DISTRICT

*To the House of Delegates:*

The condition of medical societies in District Twelve remains essentially the same as it was a year ago. Almost no activity exists. Ford and Finney counties, the only two counties in the district with enough doctors to have county societies, do have organizations, but they have been rather dormant.

This lack of activity may be at least partially

attributed to the fact that most doctors in District Twelve attend the monthly meetings of the Kansas University Postgraduate Extension Course in Garden City as well as monthly staff meetings at one or more hospitals. The feeling is prevalent that county medical society meetings in addition to these would not only be superfluous, but would be poorly attended and would present undue demands upon the all too rare "free time" of the doctors who did attend them.

Representation from District Twelve at Kansas Medical Society meetings would seem to indicate that inactivity in the district stems more from this oversupply of meetings than from lack of interest in the Kansas Medical Society and its problems.

Respectfully submitted,  
R. G. KLEIN, M.D., *Councilor*.

## Committee Reports

#### ALLIED GROUPS

R. D. Dickson, Topeka, Chr.; J. J. Basham, Eureka; T. P. Butcher, Emporia; O. W. Davidson, Kansas City; G. C. Meek, Arkansas City; R. R. Melton, Marion; R. R. Snook, McLouth; W. L. Speer, Osawatimie.

*To the House of Delegates:*

The Committee on Allied Groups held one meeting during the past year to consider a matter called to its attention by the Kansas Pharmaceutical Association, the subject of physician-owned pharmacies. The committee drafted a resolution to the effect that clinics and individual physicians should not operate their own pharmacies, and forwarded the resolution to the Council of the Kansas Medical Society for its consideration.

Members of the committee have been available for talks before allied groups and several requests for speakers were granted for meetings of pharmacists, insurance underwriters, etc.

Respectfully submitted,  
R. DALE DICKSON, M.D., *Chairman*.

#### ANESTHESIOLOGY

R. S. McKee, Leavenworth, Chr.; L. L. Bresette, Kansas City; H. J. Brown, Winfield; H. H. Hyndman, Wichita; P. H. Lorhan, Kansas City; C. D. McKeown, Wichita; R. T. Parmley, Wichita; H. F. Spencer, Emporia; F. C. Taggart, Topeka; L. E. Wonderlich, Concordia.

*To the House of Delegates:*

This committee, while not holding a formal meeting during the year, has been active in a number of fields. The members of the committee have continued to cooperate in a project started earlier toward the end that better techniques in anesthesiology may be employed in all parts of the state. This involves the presentation of papers before county

medical societies and numerous discussions on this subject at hospital staff meetings.

The committee has worked through the Kansas City Society of Anesthesiology and has been especially active in supporting the Department of Anesthesiology at the University of Kansas School of Medicine. A representative of this committee has been working with the Blue Shield Fee Schedule Committee. Therefore, even though the committee has not had an official meeting, the various members have been active in a variety of projects.

Respectfully submitted,  
R. S. MCKEE, M.D., *Chairman*.

#### AUXILIARY

C. H. Miller, Parsons, Chr.; J. A. Billingsley, Kansas City; M. A. Brawley, Frankfort; L. A. Donnell, Wichita; C. O. West, Kansas City.

*To the House of Delegates:*

Four members of the committee had one meeting during the year at which Mrs. J. A. Billingsley, president, and Mrs. M. A. Brawley, president-elect, were present and the various projects of the Auxiliary were discussed and approved.

Throughout the year close contact with the committee has been maintained by Mrs. Billingsley and the Auxiliary.

Public relations in the form of teas, public lectures and promotions of correct medical views before outside lay groups has been the principal objective of the Auxiliary during the past year.

Increased circulation of Today's Health in schools, clubs, libraries, doctors' reception rooms and pri-



# Dihydrostreptomycin Sulfate

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Extremely well tolerated and rarely causing irritation on injection, Dihydrostreptomycin Sulfate has become a most widely accepted streptomycin preparation.

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*as effective as streptomycin 2, 9, 13-15*

*less toxic for the vestibular apparatus 1-15*

*minimizes pain and swelling at the site of injection 6, 10*

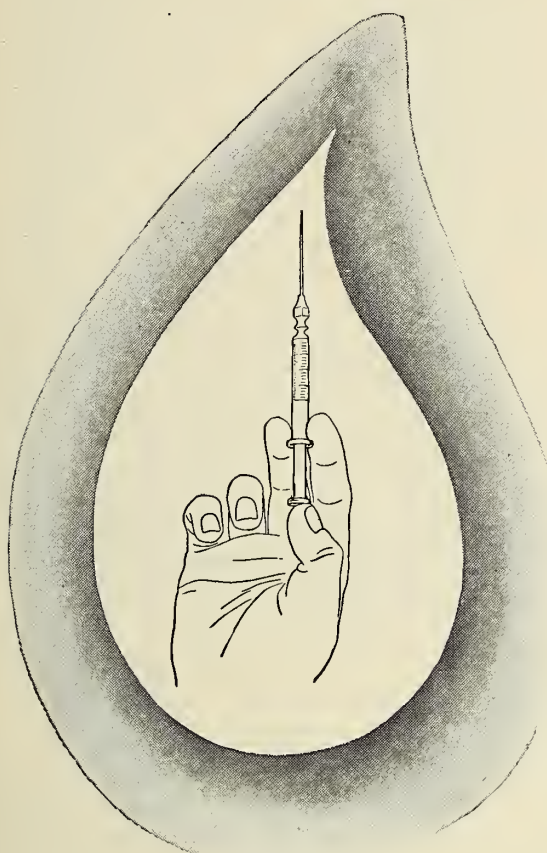
*may be used even in patients showing allergic*

*response to streptomycin 2, 9, 10, 11*

**Extensive experimental studies 6, 9, 16-18**

**proved CRYSTALLINE DIHYDROSTREPTOMYCIN SULFATE MERCK**

*less toxic for the vestibular system.*



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vate homes has also been a foremost project to promote proper health education.

The legislative committee worked untiringly during the pre-election and legislative months to keep its members properly informed on candidates and health matters in legislation.

Nurse recruitment and promotion has continued to be a major project of a number of the local Auxiliaries.

The Medical Auxiliary News, financed by the Kansas Medical Society, and the National Bulletin have been the sources of news to the individual members with monthly reports of the state and national offices.

Membership and organization have continued to increase but it is the opinion of the advisory committee that every doctor's wife should be an Auxiliary member. Mrs. Billingsley has quoted, "It is the women's business to do what the men do not get done," and it is our duty to encourage them to carry on.

The advisory committee feels the Auxiliary is an excellent organization and the members are enthusiastic in their work. The officers and county units are to be commended for their efforts to promote health education.

Respectfully submitted,

CHARLES H. MILLER, M.D., *Chairman.*

#### BLUE SHIELD FEE SCHEDULE

A. A. Fink, Topeka, Chr., Pathology; P. D. Brown, Salina, Obstetrics and Gynecology; R. M. Daugherty, Meade, General Practice (resigned); N. L. Francis, Wichita, E.N.T.; G. F. Gsell, Wichita, Eye; P. E. Hiebert, Kansas City, Radiology; A. G. Isaac, Newton, Urology; Dwight Lawson, Topeka, Blue Shield; W. O. Martin, Topeka, Anesthesiology; C. R. Rombold, Wichita, Orthopedics; L. L. Saylor, Topeka, Surgery; D. C. Wakeman, Topeka, Internal Medicine.

#### *To the House of Delegates:*

At the request of the Blue Shield Board of Directors, a committee made up of physicians representing the different specialties was appointed by the president of the Kansas Medical Society, Dr. F. R. Croson. The committee was chosen with the idea of having one member represent physicians in the state engaged in one particular specialty and one member representing general practitioners.

Each committee member, through the nominal organization of his specialty, or individually, polled physicians in that particular field to get their opinions, and reported those opinions to the committee. The committee then met with representatives of the specialty groups, the objective being to equalize the various requests and opinions pertaining to fees.

Because of the innumerable procedures and the limited time available for discussion, the committee operated on the basis of taking representative procedures and establishing fees for those, after full

discussion by all members of the committee. The fees decided upon are being submitted to the Blue Shield Board of Directors for their consideration and action.

Since the Blue Shield Board of Directors requested the formation of a committee to study fees, and since changing economic conditions make revision of the fee schedule a continuing work, it is the opinion of the chairman that a committee should again be appointed during the coming year to carry on this project.

Respectfully submitted,

A. A. FINK, M.D., *Chairman.*

#### BLUE SHIELD RELATIONS

L. W. Reynolds, Hays, Chr.; D. A. Bitzer, Washington; L. F. Glaser, Hutchinson; L. G. Glenn, Protection; R. G. Klein, Dodge City; C. H. Miller, Parsons; W. L. Pratt, Leavenworth; L. J. Schaefer, Salina; F. L. Smith, Colby; H. F. Spencer, Emporia; G. G. Whitley, Douglass; E. T. Wulff, Atchison.

#### *To the House of Delegates:*

By action of the House of Delegates at the Wichita meeting, the Blue Shield Relations Committee was made an official committee of the state Society. Prior to that time the committee had existed as a means of advising the Blue Shield Board as to what the physicians throughout the state wished the Blue Shield would do. The work has been continued this year along that line. We believe the Blue Shield can succeed only if the physicians are back of the program.

There are a number of suggested changes in the Blue Shield contract which are now being considered. The Blue Shield contract provides a complete service only for those whose family income is \$2400 or less for a married individual and \$1800 or less for a single person. With the present scale of wages and higher prices, perhaps this should be raised to \$2,000 for a single person and \$3,000 or \$3,600 for married people with a family.

The chairman of the committee has attended the meetings of the Fee Committee of the Kansas Medical Society, where they have discussed the relationship payment for any one procedure should bear to the payment for any other procedure. A few minor alterations of the present fee schedule were suggested and these will be presented to the Blue Shield Board. There were also some minor changes in the Blue Shield contract, such as inclusion of endoscopic diagnostic procedures, minor surgical procedures and x-ray therapy for non-malignant conditions. These changes are being discussed in each district at the present time and will be thrashed out at a final meeting before the Kansas Medical Society meeting in Topeka.

The committee would also like to call attention to the Blue Shield section which has appeared in the Journal of the Kansas Medical Society this year





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and also to the Blue Shield-Blue Cross Bulletin which has been sent to each participating physician each month, showing the financial status and projected ideas of the Blue Shield Board and Committee. We believe these two means of publication have been beneficial in promoting better relations of the Blue Shield Board and general medical profession.

Respectfully submitted,

L. W. REYNOLDS, M.D., *Chairman.*

#### CHILD WELFARE

L. E. Eckles, Topeka, Chr.; M. S. Boyden, Lawrence; D. R. Davis, Emporia; T. C. Hurst, Wichita; B. I. Krehbiel, Topeka; D. N. Medearis, Kansas City; E. G. Padfield, Salina.

*To the House of Delegates:*

The primary project of this committee during the past year has been the preparation of a report on child health in Kansas which was submitted before the President's White House Conference in Washington, D. C. Many individuals contributed to this report, spending innumerable hours in its preparation. Your chairman attended the White House Conference and will be glad to submit a supplementary report to the House of Delegates if requested.

Respectfully submitted,

L. E. ECKLES, M.D., *Chairman.*

#### CONSERVATION OF EYESIGHT

B. J. Ashley, Topeka, Chr.; E. E. Anderson, Kansas City; R. E. Cheney, Salina; A. M. Dougherty, Dodge City; D. O. Howard, Wichita; D. T. Loy, Great Bend; H. E. Morgan, Newton; D. P. Trimble, Emporia.

*To the House of Delegates:*

To date, correspondence has been carried among the members and the supervising state ophthalmologist concerning problems and activities of the blind division of the State Department of Social Welfare.

During the calendar year of 1950 the Division of Services for the Blind reviewed 473 eye examinations. Three hundred twenty-two persons completed treatment during the year. The department has large type books and special educational plans for children with serious visual handicaps. A visual screening program for children was carried on in cooperation with the State Department of Education in Morris County.

A meeting of the committee will be held in April. It has come to our attention that the medical profession is not reporting cases with 20/200 or less vision as required by law passed in 1949. If reported, more blind people could receive services to which they are entitled.

Respectfully submitted,

BYRON J. ASHLEY, M.D., *Chairman.*

#### CONSERVATION OF HEARING

L. B. Spake, Kansas City, Chr.; C. W. Armstrong, Salina; N. L.

Francis, Wichita; J. A. Johnson, El Dorado; C. R. Kempthorne, Manhattan; G. E. Stone, Hutchinson.

*To the House of Delegates:*

One meeting of the committee was held, at Topeka on Sunday, December 10, 1950.

A motion that the name of the committee include the word "speech" was unanimously approved and the group hereby requests that the Kansas Medical Society act to make it a "Committee on Conservation of Hearing and Speech."

The committee unanimously suggests that a mobile unit be employed to conduct a state-wide survey of school children under the following outline:

1. The state should be divided into districts.
2. An otologist should head the survey on a state-wide basis and locally.
3. The doctor should be cognizant of the fact that a hearing loss in the upper high frequency means the child will need a hearing aid in the next 10 years.
4. An otologist should make regular audiometric examinations of children in the six to 18 year group who have a hearing loss since 50 to 70 per cent can be corrected.
5. A research program should be started to consider the Rh factor, rubella and blood chemistry of these teen age children who have a high frequency loss.

A motion that all audiometry reports and tests be made by a qualified otologist and that one audiometry examination be made before treatment is outlined carried unanimously.

The committee plans to hold a meeting during the time of the annual session of the Kansas Medical Society.

Respectfully submitted,

LAVERNE B. SPAKE, M.D., *Chairman.*

#### CONSTITUTION AND RULES

A. W. Feghtly, Wichita, Chr.; W. M. Brewer, Hays; H. E. Haskins, Kingman; W. C. Rinehart, Pittsburg; E. H. Terrill, Wichita.

*To the House of Delegates:*

This committee has not considered any new amendments to the Constitution and By-Laws to be offered at the 1951 meeting. There has been considerable delay in securing the proof for and the printing of the booklet containing the Constitution and By-Laws and the A.M.A. Code of Ethics. We anticipate the completion of this work so copies may be in the hands of each member at an early date.

Respectfully submitted,

A. W. FEGHTLY, M.D., *Chairman.*

#### CONTROL OF CANCER

J. P. Berger, Wichita, Chr.; H. O. Bullock, Independence; O. R. Clark, Topeka; A. A. Fink, Topeka; L. F. Glaser, Hutchinson; J. J.





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*To the House of Delegates:*

This committee met on several occasions and as in past years prepared a program for the Mid-West Cancer Conference. Committee activities continue along the lines begun in previous years whereby this group serves in an advisory capacity to the Kansas State Board of Health through its Division on Cancer Control. It acts in an advisory capacity to the Kansas Division of the American Cancer Society, assisting that organization by reviewing publicity, establishing a speakers' bureau, approving diagnostic clinics, etc.

A more detailed description of committee activities would be repetition of the material reported in previous years, and since the House of Delegates is already familiar with those details they will be omitted at this time.

Respectfully submitted,

J. P. BERGER, M.D., *Chairman.*

#### CONTROL OF TUBERCULOSIS

C. J. Wilen, Manhattan, Chr.; A. L. Ashmore, Wichita; G. B. Athy, Columbus; Andre Baude, Topeka; F. E. Bishop, Atwood; R. I. Canuteson, Lawrence; S. L. Cox, Topeka; H. L. Hiebert, Topeka; P. W. Schafer, Kansas City; L. E. Strode, Girard; C. F. Taylor, Norton; F. A. Trump, Ottawa.

*To the House of Delegates:*

The Committee on Control of Tuberculosis held a meeting on January 21 in Topeka. Many subjects were discussed.

The committee feels there is urgent need for a tuberculosis diagnostic and treatment center in Southeastern Kansas, similar to the Hillcrest Division of the State Sanatorium serving North Central Kansas. The committee made a recommendation to the Council advising the Society to support legislation to provide a 50-bed diagnostic screening and treatment unit as a division of the State Sanatorium to be established in Southeastern Kansas.

The matter of improving the tuberculosis register at the Kansas State Board of Health to make it more up-to-date was considered. It was learned that the essential problem is lack of personnel trained in public health statistics. This boiled down to inadequate salaries under present civil service classifications which fail to hold and attract competent personnel.

The photofluorographic survey conducted by the State Board of Health and sponsored by the Kansas Tuberculosis Society is making good progress and a large section of the state has been surveyed. Difficulty is being encountered in getting effective follow-up of the survey cases by the family physician. Methods for improving the follow-up were discussed.

There is also a definite need in many sections of the state for a more adequate follow-up of discharged sanatorium cases and other cases on the active register and their contacts. It appeared to the committee that one way to meet this demand would be through organization of chest clinics under the supervision of one or more local physicians interested in tuberculosis. These clinics would be set up under the aegis of the local medical societies and would accept cases referred to them by physicians and the public health authorities. The Kansas Tuberculosis Society is willing to compensate the clinic physician and underwrite the expense of the clinics.

Respectfully submitted,

CARL J. WILEN, M.D., *Chairman.*

#### EMERGENCY MEDICAL CARE

W. H. Algie, Kansas City, Chr.; R. M. Carr, Junction City; G. F. Gsell, Wichita; G. B. McIlvain, Clay Center; M. Snyder, Salina; C. B. Trees, Topeka; D. H. Wood, Pittsburg.

*To the House of Delegates:*

This committee has held several meetings during the year and earlier expressed its willingness to co-operate with the Kansas Civil Defense Council on all matters pertaining to the medical profession. Your committee has been advised that the Division of Health Services under the state civil defense program shall be directed under the Kansas State Board of Health, and since state planning has not been completed your committee has been unable to present a program in this regard.

The director of the State Board of Health appointed an advisory board consisting of representatives from many health agencies. Your chairman is a member of this board. Your Committee on Emergency Medical Care is ready to represent the medical profession on the board at all times and is likewise desirous of serving the profession in an advisory capacity or in any way that it may.

Respectfully submitted,

W. H. ALGIE, M.D., *Chairman.*

#### ENDOWMENT

J. W. Randell, Marysville, Chr.; F. K. Bosse, Atchison; V. E. Chesky, Halstead; G. H. Jackman, Cimarron; L. K. Nix, Wichita.

*To the House of Delegates:*

It seems to be the opinion of the Endowment Committee that there should be no further solicitation of funds for the Student Union Building Fund at this time. The committee urges that individual members of the Kansas Medical Society continue to avail themselves of the opportunity to assist the medical school and medical students who are in need of assistance. Dr. Franklin D. Murphy will be able and happy to assist in these worthwhile projects.

Respectfully submitted,

J. W. RANDELL, M.D., *Chairman.*



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Salyrgan-Theophylline is extensively employed for the treatment of cardiac and cardiorenal edema, dropsy of nephrosis and ascites of hepatic cirrhosis. The diuretic response does not "wear out," so that in most cases administration may be repeated as required for years, without loss of efficiency.

Noth,<sup>2</sup> for instance, in discussing a case of Pick's disease, states that the patient "has received about 450 doses of mercurial diuretics, nearly all of which were of Salyrgan given [parenterally] . . . At no time has he experienced orthopnea, nocturnal dyspnea, or episodes of dyspnea while at rest. He is still working every day as a banker . . ."

1. Hutcheson, J. M.: Management of Cardiac Failure. *Virginia Med. Monthly*, 74:458, Oct., 1947.

2. Nath, P. H.: Pick's Disease: A Record of Eight Years' Treatment with Salyrgan, Ammonium Nitrate, and Abdominal Paracentesis. *Prac. Staff Meet. Mayo Clin.*, 12:513, Aug. 18, 1937.

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**EXPERT TESTIMONY**

C. E. Joss, Topeka, Chr.; E. J. Frost, Wichita; J. L. Lattimore, Topeka; J. W. Spearing, Columbus; E. M. Sutton, Salina.

*To the House of Delegates:*

Since no complaints have been received, the Committee on Expert Testimony has not held a meeting during the past year. We are glad to report this fact since it is a credit to the medical profession.

Respectfully submitted,

C. E. JOSS, M.D., *Chairman.*

**HOSPITAL SURVEY**

J. L. Grove, Newton, Chr.; P. L. Beiderwell, Belleville; J. D. Colt, V. Manhattan; E. R. Gelvin, Concordia; G. W. Hammel, El Dorado; A. C. Harcher, Wellington; O. W. Longwood, Stafford; R. M. Owensby, Mankato; F. C. Shepard, Clay Center.

*To the House of Delegates:*

The Committee on Hospital Survey has not met during the past year. It is felt that the committee will be useful in functioning under the civilian defense program, especially in regard to disaster planning from a hospital standpoint. The Kansas Medical Society no doubt will be actively into disaster relief planning within the next few months.

Respectfully submitted,

JOHN L. GROVE, M.D., *Chairman.*

**INDUSTRIAL MEDICINE**

H. O. Anderson, Wichita, Chr.; J. L. Beaver, Wichita; J. A. Grove, Newton; C. W. Hall, Hutchinson; G. A. Patton, Archison; H. L. Regier, Kansas City; J. W. Spearing, Columbus; M. A. Walker, Kansas City; F. N. White, Russell.

*To the House of Delegates:*

This committee held one meeting during the year at which time two projects were discussed. The first represented legislative proposals for changes of existing laws pertaining to industrial medicine. The Kansas State Board of Health requested this committee to review a bill which would transfer health regulations pertaining to industry from the Department of Labor to the Board of Health. The committee reviewed the subject and submitted its recommendations to the Council of the Kansas Medical Society.

The other item on the agenda was consideration of better relations between medicine and industry and labor. Various suggestions were made, including one to provide more information on this subject to the medical profession. A second proposal originating in this committee is the presentation of a speaker on industrial medicine at the annual session. This has been accomplished by arranging to have Dr. Robert A. Kehoe of Cincinnati, Ohio, on the program. He will present a scientific paper before the Kansas Medical Society on Thursday morning of the annual session and will appear before a pub-

lic forum, speaking on industrial medicine, on Thursday afternoon.

Respectfully submitted,

H. O. ANDERSON, M.D., *Chairman.*

**KANSAS MEDICAL PROCUREMENT BOARD**

L. R. Pyle, Topeka, Chr.; M. W. Hall, Wichita; P. W. Morgan, Emporia.

*To the House of Delegates:*

Your Kansas Medical Procurement Board has had no formal meeting although Dr. Morgan and your chairman have had several discussions about the military as concerns doctors.

Your chairman was appointed chairman of the Kansas Volunteer Advisory Committee, along with A. J. Buff, D.D.S., and Floyd C. Beelman, M.D., by the National Advisory Committee. They attended the meeting of all state committees in Washington in January.

Affairs concerning Selective Service have gone along quite smoothly due to the cooperation of the county medical societies and their local advisory committees.

Your committee stands ready to help you with any of your problems. We request your continued wholehearted cooperation. Please address any correspondence to Kansas Volunteer Advisory Committee, 512 New England Building, Topeka, Kansas.

Respectfully submitted,

LUCIEN R. PYLE, M.D., *Chairman.*

**MATERNAL WELFARE**

D. E. Gray, Topeka, Chr.; F. A. Allen, Newton; D. A. Anderson, Salina; P. D. Brown, Salina; L. A. Calkins, Kansas City; H. C. Clark, Wichita; P. R. Ensign, Topeka; H. M. Floersch, Kansas City; R. B. McVay, Clay Center; H. S. O'Donnell, Ellsworth; R. A. Schwegler, Lawrence; R. A. West, Wichita.

*To the House of Delegates:*

One meeting of the Committee on Maternal Welfare was held during the past year.

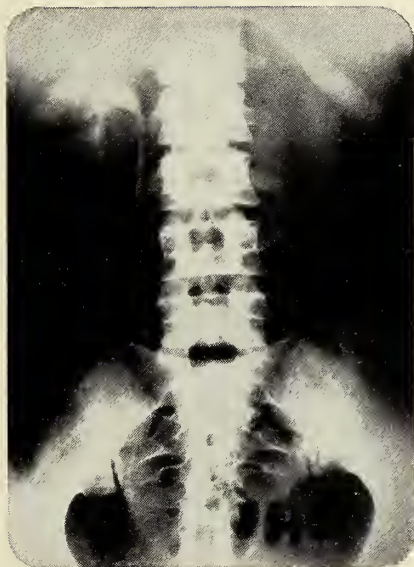
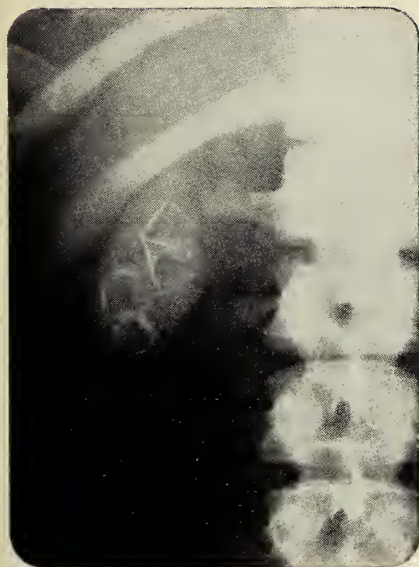
The group reviewed the report of maternal deaths in Kansas in 1950, prepared by the Kansas State Board of Health, and discussed each case separately.

A pamphlet, "Minimum Standards of Obstetrical Care," written in 1940 by the Committee on Maternal Welfare of the Kansas Medical Society and published by the Child Hygiene Division of the Board of Health, was discussed. Revision of the pamphlet to bring it up to date is one of the current projects of the committee.

A report was given on another publication of the Board of Health, the Pierre and Pelican series. The committee did not approve further distribution, feeling that the amount of money required, approximately \$40,000 per year, could be spent to better advantage in another way.



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A program of the Board of Health requiring inspection and licensing of maternity homes in the state was discussed, along with proposed changes in the rules and regulations governing the project. No action was taken, but the committee will make recommendations on that subject to the Board of Health in the future.

The committee recommends the reorganization of the Kansas Obstetrical and Gynecological Society.

Respectfully submitted,

D. E. GRAY, M.D., *Chairman.*

#### MEDICAL ASSISTANTS

J. A. Holmes, Lawrence, Chr.; W. L. Anderson, Atchison; A. C. Armitage, Hutchinson; K. J. Bierlein, Pittsburg; H. J. Davis, Topeka; M. T. Glassen, Phillipsburg; B. P. Meeker, Wichita.

*To the House of Delegates:*

The Advisory Committee to the Kansas Medical Assistants' Society was first consulted by the latter society in September, 1950, in regard to an indemnity insurance policy offered by the Continental Casualty Company to the medical assistants. This was originally offered if a specified percentage of the girls would take out the policy. The policy was approved after consultation with a number of other persons, including Mr. Sam Barham of Blue Cross-Blue Shield. Since only a small number of the girls elected to take it, the company eventually changed this to make it available on a selective basis.

The chairman of the committee attended meetings of the Executive Committee of the Kansas Medical Assistants' Society in Pittsburg, November 18, 1950, and in Lawrence, January 28, 1951. During these meetings a constitutional amendment recommending a change in nominating procedure was approved by the Executive Committee. A meeting to interest medical assistants in Franklin County was held in Ottawa during the winter and representatives of the Board of Directors of the Medical Assistants' Society and of the Advisory Committee of the Kansas Medical Society attended these meetings.

It is felt that the girls are quite capable of handling their affairs and only minor assistance has been rendered by the Advisory Committee. It has been a pleasure to work with them, and any additional assistance necessary will be offered during their annual meeting in May. It is regretted that other members of the committee for one reason or another have not found it possible to attend the meetings of the Board of Directors of the Medical Assistants' Society.

Respectfully submitted,

JOHN A. HOLMES, M.D., *Chairman.*

#### MEDICAL ECONOMICS

R. Sohlberg, Jr., McPherson, Chr.; C. M. Alderson, Dodge City; J. N. Blank, Hutchinson; A. W. Butcher, Wakefield; T. Dechairo, Westmoreland; G. E. Milbank, Wichita; C. V. Minnick, Junction City; B. A. Nelson, Manhattan; L. S. Nelson, Jr., Salina; P. A. Pettit, Paola; H. L. Songer, Lincoln; C. F. Young, Fort Scott.

*To the House of Delegates:*

This committee is holding a meeting after the date on which this report is required. The meeting is the culmination of considerable research in the field of malpractice insurance, voluntary health insurance, life insurance and indigent medical care. Specific proposals will be made at this committee meeting and will be submitted as a supplementary report at the time of the House of Delegates meeting in May.

Respectfully submitted,

ROBERT SOHLBERG, JR., M.D., *Chairman.*

#### MEDICAL SCHOOLS

H. H. Jones, Winfield, Chr.; R. G. Ball, Manhattan; C. M. Barnes, Seneca; F. C. Beelman, Topeka; J. G. Claypool, Howard; D. M. Diefendorf, Waterville; C. A. Gripkey, Kansas City; V. H. Hildyard, Baldwin; M. B. Miller, Topeka; H. P. Palmer, Scott City; R. E. White, Garnett.

*To the House of Delegates:*

Since the Council passed its educational resolution in 1943, it has been increasingly apparent that medical training is a continuous process. This work has projected another facet of the state society into national attention. The Kansas Medical Society is in a unique position in that it works in close liaison with the State Board of Health and the University of Kansas Medical Center.

During the past fiscal year, all of the plans of the committee have been fulfilled. The extension work has been given in eight centers with highly satisfactory programs and reception. Courses in the graduate school of the medical center have increased in scope and in registration. It is the firm conviction of the committee that these programs are filling a real need in bringing proven medical advances directly to the practitioner.

Plans for the coming fiscal year will be completed too late for publication, but will be reported to the House of Delegates at its first meeting.

Respectfully submitted,

HAROLD H. JONES, M.D., *Chairman.*

#### MENTAL HEALTH

T. L. Foster, Halstead, Chr.; A. J. Adams, Wichita; J. Aldis, Fort Scott; R. L. Drake, Wichita; D. B. Foster, Topeka; E. D. Greenwood, Topeka; L. W. Hatton, Salina; C. C. Hawke, Winfield; C. J. Kurth, Wichita; H. C. Martin, Coffeyville; W. C. Menninger, Topeka; J. T. Naramore, Larned; W. F. Roth, Jr., Kansas City; M. O. Steffen, Great Bend.

*To the House of Delegates:*

The Mental Health Committee held regular monthly meetings from September to January. It



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## Relationship of Stress to Autonomic Lability

Studies in psychosomatics have shown that functional disorders often are a result of the patient's inability to adjust to emotionally stressful situations (stressor factors).

Nervous tension and chronic anxiety, discharged through a labile Autonomic Nervous System, can cause somatic disturbance.<sup>1,2</sup> Such states may involve any one of the organ systems or several at one time.<sup>1,3</sup> The outline below is designed to relate gastrointestinal and cardiovascular symptomatology to the exaggerated response of the autonomic nervous system.

	Physiologic Effects of Autonomic Discharge	
	Sympathetic	Parasympathetic
Gastro-intestinal System	Hypomotility Intestinal Atony Hyposecretion Reduced salivation	Hypermotility Gastrointestinal spasm Hypersecretion
Cardio-vascular System	Rapid heart rate Peripheral vasoconstriction	Slow heart rate Vasodilatation
Functional Manifestations	Palpitation Tachycardia Elevated blood pressure Dry mouth and throat	Heartburn Nausea-vomiting Low blood pressure Colonic spasm

The data here tabulated is from references 3,4,5,6,7, given below.

When the clinical picture is suggestive of functional disorder, the diagnosis is supported by the presence of the following indications of autonomic lability:

Variable Blood Pressure  
Body Temperature Variations  
Changing pulse rate  
Deviations in B. M. R.  
Exaggerated Cold Pressure Reflex  
Oculo-Cardiac Reflex Abnormalities  
Glucose Tolerance Alterations

Therapy in these cases is directed toward: 1) relieving the somatic disturbance to prepare the patient for psychotherapy\*; 2) guidance in making adjustment to stressful situations and correction of unhealthy attitudes.

\*Drug treatment using adrenergic and cholinergic blocking agents in conjunction with sedatives. 8,9,10.

1. Ebaugh, F.: Postgrad. Med. 4: 208, 1948. 2. Wilbur, D.: J.A.M.A. 141: 1199, 1949. 3. Williams, E. and Carmichael, C.: J. Nat'l. Med. Assoc. 42: 32, 1950. 4. Goodman, L. and Gilman, A.: The Pharmacological Basis of Therapeutics, The Macmillan Co., 1941. 5. Katz, L. et al: Ann. Int. Med. 27: 261, 1947. 6. Weiss, E. et al: Am. J. Psychiat. 107: 264, 1950. 7. Alvarez, W.: Chicago Med. Soc. Bulletin, 581, 1950. 8. Rakoff, A.: A Course in Practical Therapeutics, Williams and Wilkins, 1948. 9. Karnosh, L. and Zucker, E.: A Handbook of Psychiatry. C. V. Mosby Co., 1945. 10. Harris, L.: Canad. M.A.J. 58: 251, 1948.

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was felt that one of the principal duties was to study a revision of commitment laws. Each meeting was regularly attended also by a committee appointed for this program by the president of the Kansas State Bar Association. Mr. Jack Copeland of St. John was chairman of the legal committee.

The first meeting was held September 24, 1950, at the reformatory at Hutchinson at the invitation of Mr. Roy Frost, superintendent. All committee members were highly pleased and gratified to see the splendid work that Mr. Frost is attempting to do in that institution. They also highly praised Mr. Ford, who has been with the institution nearly 30 years and during that time has been extremely conscientious and industrious in his attempt to improve the standards of treatment and care.

All members of the medical and legal professions on the committee regret that the institution is so handicapped by an antiquated Criminal Code, inadequate facilities and a general lack of understanding of the problem outside the institution. Consequently, funds are inadequate to provide anything like a desirable rehabilitation program. The committee agreed that we should do everything possible to assist Mr. Frost in securing appropriations which would enable him to extend his rehabilitation and vocational program. Particularly needed at present are a department of psychology, a department of social service, psychiatric consultation and an extension of vocational and recreational programs. Under the existing situation in the reformatory a boy who becomes psychotic can be committed to the state hospital, but no other expert assistance with mental health is available.

Mr. L. L. McLaughlin, chairman of the bar association and of the Committee on Criminal Law and Enforcement, was present at the December meeting. He reported that the bar association, at its last meeting, had been presented with five recommendations from his committee (annual meeting in Wichita in May, 1950), and would like help from the medical society on two of those: (1) pertaining to the law and the sexual fiend, the present law being inadequate; (2) modernization of laws regarding insanity in connection with criminal acts. After considerable discussion, a resolution was adopted to request the 1951 session of the Kansas Legislature to appoint a commission or committee to undertake immediately the study of problems concerned with the sexual offender or sexual deviate and the general question of the insanity of criminal offenders and the plea of insanity in criminal cases.

It has long been recognized that our commitment proceedings are antiquated and the whole structure of commitment needs to be revised. A bill providing for this modernization was presented in the

1949 Legislature and passed the House but failed in the Senate. A sub-committee, headed by Mr. Jack Copeland of the bar association and Dr. D. B. Foster of Topeka, completely revised the 1949 suggested law, incorporating a number of new features. This was presented as a bill in the 1951 Legislature. This bill was killed by the House committee, but a resolution was passed directing the Legislative Council to study the problem of commitments during the next two years.

It was the hope of this committee that the law could be so amended that mental illness would have much less of a criminal stigma and that mental illness be treated as a health problem rather than a legal problem. The one feature of the law which we feel to be very important is referred to as the Certification Feature, whereby two physicians and one lawyer may certify that a patient is in need of treatment in the mental hospital, after which the patient can be taken to the mental hospital and treated, providing he does not demand a public hearing in court. This type of law has been enacted in some 14 states where it is working successfully. Its constitutionality has been tested six times and each time it has stood up, but we have been having difficulty in convincing many people who have not given a great deal of thought to the subject that it would be wise not to drag every mentally ill person through a court procedure. Incidentally, such a law has been on the statute books for many years pertaining to private institutions, and this would, with some revisions, extend to state hospitals.

It appears that we must work another two years to present this program to the 1953 Legislature. Judge Rexroad and Mr. Copeland of the legal association are sufficiently disturbed over the failure to receive a warmer reception in the Legislature this year that they are anticipating writing a series of articles on the subject for the Kansas Bar Association Journal.

Your chairman wishes to express his thanks to the committee members and to the president of the Kansas Medical Society for their generous cooperation and support.

Respectfully submitted,

THOMAS L. FOSTER, M.D., *Chairman.*

#### NECROLOGY

C. W. Miller, Wichita, Chr.; J. D. Colt, Sr., Manhattan; E. C. Duncan, Fredonia; C. S. Huffman, Columbus.

*To the House of Delegates:*

The Committee on Necrology submits the following list of members of the Kansas Medical Society whose deaths have been reported since the last meet-



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ing of the House of Delegates:

<i>Name and Address</i>	<i>Age</i>	<i>Date</i> 1950
Dr. Edwin Grant Ganoung, Salina	84	Jan. 23
Dr. Clem Hood Jones, Galena	84	Mar. 29
Dr. John Franklin Hassig, Kansas City	75	Apr. 13
Dr. Charles Waddle Lawrence, Emporia	80	Apr. 29
Dr. Owen G. Hutchison, Marysville	71	May 10
Dr. Lot Dalbert Mabie, Kansas City	84	May 22
Dr. Claude E. McCarry, Dodge City	77	May 24
Dr. Clement E. Grigsby, Coffeyville	81	May 29
Dr. Carl Ferdinand Nelson, Lawrence	68	June 4
Dr. Charles Maxwell Jenney, Salina	71	June 13
Dr. James Henry Boswell, Baxter Springs	71	June 16
Dr. Homer Everett Markham, Ottawa	83	June 19
Dr. Thomas Augustine O'Connor, Topeka	60	July 8
Dr. Fay Edward Kunce, Wichita	69	July 16
Dr. Chester Leroy Patton, Emporia	77	Aug. 27
Dr. William Henry Elkins, Topeka	83	Sept. 1
Dr. George E. Seitz, Salina	71	Sept. 14
Dr. Wilhelm Edward Regier, Whitewater	67	Oct. 24
Dr. James George Conley, Pittsburg	63	Oct. 28
Dr. Chester Orville Shepard, Independence	62	Nov. 8
Dr. Fred Emerson Torrance, Winfield	68	Nov. 18
Dr. Herbert Randles, Fort Scott	81	Nov. 24
Dr. Elmer J. Reichley, Herington	75	Nov. 27
Dr. Solomon Henry Thompson, Kansas City	80	Dec. 11
1951		
Dr. John Ross Newman, Fort Scott	70	Jan. 23
Dr. John Gurley Missildine, Wichita	66	Jan. 30
Dr. Jonathan Basil Carter, Ellsworth	73	Feb. 3
Dr. James Robinet Burnett, Caldwell	70	Feb. 23
Dr. Gilbert Wilson Hay, Parsons	74	Mar. 3
Dr. Samuel M. Hibbard, Sabetha	67	Mar. 7
Dr. Clarence Logan Zugg, Arkansas City	76	Mar. 9

Respectfully submitted,

C. W. MILLER, M.D., *Chairman.*

#### NOMINATING COMMITTEE

Committee selected by the House of Delegates at the 1950 annual meeting in Wichita: J. L. Lattimore, M.D., Chr., Topeka; W. P. Callahan, Wichita; O. W. Davidson, Kansas City; W. M. Mills, Topeka; L. S. Nelson, Salina.

The Nominating Committee met in Topeka in February and prepared the following slate from which officers will be elected at the annual session in Topeka on May 17, 1951: president-elect, Dr. W. F. Bernstorff, Winfield, and Dr. Barrett A. Nelson, Manhattan; first vice president, Dr. J. V. Van Cleve, Wichita, and Dr. Lucien R. Pyle, Topeka; second vice president, Dr. Conrad M. Barnes, Seneca, and Dr. Murray C. Eddy, Hays; treasurer, Dr. Vernon Wiksten, Topeka, and Dr. Byron J. Ashley, Topeka; secretary, Dr. Dale D. Vermillion, Goodland, and Dr. Robert Sohlberg, McPherson; delegate to the A.M.A., Dr. John M. Porter, Concordia, and Dr. Thomas P. Butcher, Emporia; alternate, Dr. J. L. Lattimore, Topeka, and Dr. P. E. Hiebert, Kansas City.

Respectfully submitted,

J. L. LATTIMORE, M.D., *Chairman.*

#### PUBLIC HEALTH AND EDUCATION

R. C. Polson, Great Bend, Chr.; J. O. Austin, Garden City; H. R. Barnes, Hutchinson; V. E. Brown, Sabetha; N. A. Burkett, Council Grove; R. D. Grayson, Overland Park; O. L. Martin, Salina; R. H. Moore, Lansing; L. W. Reynolds, Hays; C. E. Robison, Hoisington; C. O. Stensaas, Arkansas City; W. W. Summerville, Kansas City.

*To the House of Delegates:*

During one meeting held this year the committee discussed numerous problems, especially on the subject of public education.

By the unanimous endorsement of this committee your chairman respectfully requests the consideration of the House of Delegates of a proposal to increase efforts of the medical profession toward the end that better public relations may be obtained. It is the belief of this committee that regular news releases should be sent to the papers of Kansas, that efforts should be made to utilize the radio and all other means of public information. Your committee feels that the establishment of grievance committees on a local level is urgently needed and again recommends that every doctor should consider himself a committee of one for the presentation of better public relations in behalf of the medical profession.

The committee is seriously alarmed at the public reaction toward medicine and requests the House of Delegates to give careful consideration to this highly important subject so that a sound program may be prepared for the coming year in this regard.

Respectfully submitted,

R. C. POLSON, M.D., *Chairman.*

#### RURAL HEALTH

S. A. Anderson, Clay Center, Chr.; L. E. Beal, Fredonia; D. Chaffee, Abilene; R. M. Daugherty, Meade; J. C. Dysart, Sterling; A. C. Eitzen, Hillsboro; J. T. Fowler, Osawatimie; H. L. Graber, Hutchinson; A. J. Horejsi, Ellsworth; R. E. Jordan, Holton; J. F. Nienstedt, Beloit; M. E. Robinson, Goodland; E. A. Smiley, Junction City; T. J. Walz, St. Francis; M. W. Wells, Winfield.

*To the House of Delegates:*

This committee has continued its efforts to provide medical care for all parts of the state. It is significant, we believe, to note that during the past two years something more than 300 physicians obtained licenses to practice in Kansas and 67 of them located in communities of 2,500 or less. To us this seems to be the first indication of the reversal of a trend that has been operating for 50 years. It is the hope of the committee that efforts in this regard will be continued.

Your chairman was authorized to attend the A.M.A. Conference on Rural Health held at Memphis, Tennessee. His return from this meeting was too late to permit a report to be included in the Journal. However, a summary of the report on this subject will be available should it be requested.

Respectfully submitted,

S. A. ANDERSON, M.D., *Chairman.*



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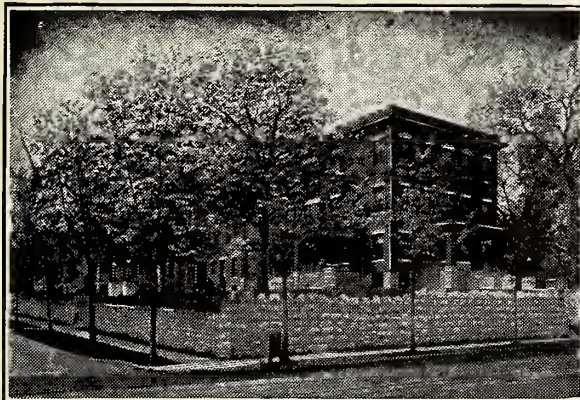
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#### *To the House of Delegates:*

Your Committee on Stormont Medical Library has not been able to meet as a group.

The chairman has made two visits to the library and has consulted with Miss Louise McNeal, the state librarian, as to the list of medical periodicals. He took it upon himself to make suggestions, as some periodicals on the list might be discontinued. The space allotted to the library in the Capitol building is limited, and obsolete journals, especially incomplete files, should be removed.

The same is true of medical books now obsolete. This being a working library, it is of no value unless the listings are of recent date. Pure reference works should be retained, the librarian says. However, there is not room for all books, and we know it was not the intention of the Stormont trust fund to acquire and keep all books and periodicals when once out of date.

The committee and the librarian would welcome suggestions as to the disposal of obsolete numbers since the shelf space is needed for current publications. Have we any place where such material can be stored? It is interesting and valuable, also historical, but it is not current matter.

A suggested list of new books was presented.

The question of a committee to be appointed to gather material for a history of the Kansas Medical Society is most important. It will call for much work and some expense, and it must be done while some of our older members can help.

Respectfully submitted,

E. L. KALBFLEISCH, M.D., *Chairman.*

### STUDY OF HEART DISEASE

P. W. Morgan, Emporia, Chr.; D. R. Bedford, Topeka; P. M. Clark, Jr., Independence; K. L. Druet, Salina; C. W. Erickson, Pittsburg; L. H. Leger, Kansas City; F. J. McEwen, Wichita; G. L. Norris, Winfield; H. W. Palmer, Wichita; L. O. Peckenschneider, Halstead; J. M. Porrer, Concordia; D. C. Wakeman, Topeka.

#### *To the House of Delegates:*

The committee has had several meetings during the past year.

The Kansas Heart Association, the organization of which this committee had as one of its objectives a few years ago, has thrived as an affiliate of the American Heart Association and has continued to be increasingly more effective. It has served as a medium for the dissemination of lay and professional education material in a fashion which this committee could not have done.

The committee assisted in arranging cardiovascular speakers for the annual meeting of the Kansas

Medical Society and for several county medical societies during the past year.

The liaison and cooperation previously established and manifested with the School of Medicine, the Veterans' facilities in Kansas, the State Board of Health, the Tuberculosis Association and numerous lay groups has increased during the past year.

As an indication of recognition of the committee's work, its chairman was invited to be one of the 200 participants in the First National Conference on Cardiovascular Diseases which was held in Washington, D. C., January, 1950. This outstanding meeting represented a union of the personnel of the American Heart Association and the National Heart Institute (founded in 1949). The former is a voluntary organization dating from about 1912 with members who serve gratuitously, and the latter is a congressionally created enterprise supported by congressionally voted public funds. It is extremely important to know that the "Heart Institute" is in fact a means of implementing the program of the American Heart Association and that the leaders of the latter organization have been solicited to dictate the program and activities of "The Institute."

Your committee arranged a special Advanced Refresher Meeting (or Course) in Cardiology for members of the Kansas profession who were previously trained to take such a course. The instructor was Professor Robert Bayley of Oklahoma.

In contrast to the "Advanced" review which was financed by the limited number of matriculants, your committee arranged an all day open meeting for the profession without expense to those who attended. Cardiovascular subjects were discussed on the level of the general practitioner. The topics were chosen for their practical or educational merits.

The committee endorses the profession's interest in and would encourage the formation of more county or regional chapters of the Kansas Heart Association. The Pediatric Diagnostic Cardiac Clinics which could be set up in every area where a "Chapter" of the Kansas Heart Association exists have been endorsed and established in one community. In that community, the public and the profession have both benefited. Objections voiced by the profession in several areas, which have prevented those areas from taking advantage of this opportunity, have not been apparent in the only community in which the project has been tried. The committee suggests that the matter be viewed from this aspect wherever the prerequisites for the establishment of a Pediatric Diagnostic Cardiac Center exist.

The long range program of this committee has been and will continue to be primarily educational. Originally, it was only professional, but now in co-



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Wendell T. Wingett, M.D.

operation with the American Heart Association the lay public is included. The committee members wish to express their appreciation of the unrestrained cooperation of the central office of the Kansas Medical Society, the dean of the School of Medicine, the director of the State Board of Health and the director of and the staff of the Winter Veterans Administration Hospital. Also, the committee is indebted to the out-of-state instructors who have left their work to come here and to numerous members of the Kansas Medical Society whose interest and participation have made the program possible.

Respectfully submitted,  
PHILIP W. MORGAN, M.D., *Chairman.*

#### VETERANS ADMINISTRATION AFFAIRS

F. R. Croson, Clay Center, Chr.; E. A. McClintock, Topeka; H. E. O'Donnell, Junction City; J. H. A. Peck, St. Francis.

*To the House of Delegates:*

This committee was set up to serve as liaison between the Veterans Administration and the medical profession. During the past year no requests were received from the Veterans Administration; therefore, it has not been necessary for this committee to have a meeting.

Respectfully submitted,

F. R. CROSON, M.D., *Chairman.*

## Kansas Physicians' Service

*To the House of Delegates:*

The progress of Blue Shield during the previous 12-month period may be measured in relation to four broad areas. They are: physician relations, enrollment and public relations, financial experience, operating efficiency. I am happy to report that there is considerable tangible evidence of significant gains in each of these activities.

*Physician Relations.* Much of the credit for progress in physician relations must go to the splendid efforts of the Blue Shield Relations Committee of the Kansas Medical Society. This committee consists of a representative from each of the 12 councilor districts. It consists further of district committees composed of representatives from each county society. Therefore, there are some 125 doctors in the state who have helped interpret Blue Shield problems and policies to their colleagues, as well as to advise Blue Shield on the viewpoints of the profession.

The accumulative effect of the work of this group has been an important contribution to the greatly improved relations between Blue Shield and the medical profession in Kansas.

*Fee Committee.* A vital part of our physician relations program consisted in our work with the newly organized Fee Committee of the Kansas Medical Society. This committee will make its own report in this issue.

A further contribution to the relations program has been the fine cooperation developed between the plan and the Kansas Radiologic Society and the Kansas Society of Anesthesiologists.

Activities of the plan itself have also aided, we believe, in developing a better understanding. We refer to the publication of the monthly magazine *This Month* which has a special page of informa-

tion for doctors. This factual publication is widely read by participating physicians.

*Enrollment and Public Relations.* Enrollment gain is a direct measure of public acceptance. Here, in a predominantly rural population, Kansas Blue Shield has made creditable progress. Kansas was second only to Texas among the Blue Shield plans in our area in the number of members gained during 1950. A net growth of 60,492 members was recorded or an increase in total enrollment during the year of 31 per cent. Kansas Blue Shield ranks 20th in size among 82 Blue Shield plans. One important point in connection with this enrollment is that it is distributed in many areas of our state. This has brought about a high degree of participation by our physicians. In fact, in 1950, 1,217 participating physicians received some Blue Shield payment. Over 500 doctors received more than \$1,000 from Blue Shield during the year. Blue Shield has become an important instrument of good public relations for the medical profession.

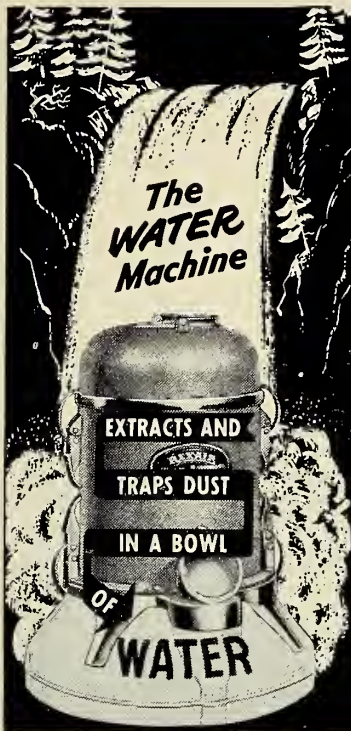
*Financial Experience.* Blue Shield's financial experience during 1950 was the best in the plan's history.

		Per Cent
Total income for 1950.....	\$2,269,966.56	100.00
Total payments to physicians..	1,831,039.50	80.66
Total operating expenses.....	273,747.61	12.06
Net addition to reserve .....	165,179.45	7.28
Reserve as of January 31, 1951	306,888.15	

*Operating Efficiency.* Measured against a number of different standards the operating efficiency of the employed staff of Kansas Blue Shield has earned the thanks and commendation of the Blue Shield Board and, for that matter, of the entire medical profession in Kansas.

One good measurement of efficiency is the cost of handling a single contract for one month. This





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**Large Volume of Transactions.** Not many physicians would have any idea of the tremendous volume of transactions which takes place at Blue Cross-Blue Shield headquarters. A summary of a few of these transactions will serve to indicate the size of the operation.

<i>Item</i>	<i>Number During 1950</i>
Pieces of mail received.....	579,300
Pieces of mail sent.....	721,800
Total Handled .....	1,301,100
Changes in membership status.....	52,836
Direct pay bills to members .....	234,000
Bills to employee groups.....	42,600
Admission Notices from hospitals.....	52,800
Hospital Statements of Accounts audited..	63,391
Service Statements from doctors .....	49,802
Letters Answered .....	62,496
Pieces of mimeograph material.....	360,000

These figures tell a story of modern management methods, good planning and team work. The Blue Shield Board has issued a statement of praise for the entire Blue Shield-Blue Cross staff. I am proud to include the factual basis for this commendation in my report to the House of Delegates.

Respectfully submitted,

WARREN F. BERNSTORF, M.D., *President.*

Modern public health does not prevent death alone. It also prevents disease. For every life preserved by a tuberculosis program, scores of individuals are saved from invalidism. For every life saved from malaria, hundreds of individuals are maintained as active producers in the population.—*Am. J. Public Health, August, 1950.*

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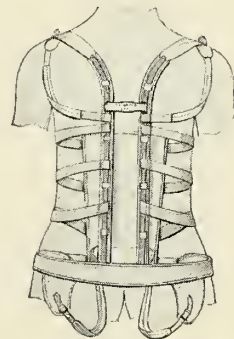
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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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No. 5

## Infantile Cortical Hyperostoses

John F. Bowser, M.D.\*

Kansas City, Kansas

Infantile cortical hyperostoses was first described as a new syndrome by John Caffey and William A. Silverman, when they published their paper in the July, 1945, issue of the American Journal of Roentgenology based on four cases which they had seen between 1938 and 1944. Caffey had reported the first of these four cases in the same journal in November, 1939, in an article entitled "Syphilis of Skeleton in Early Infancy" and then concluded that it was not syphilis and ascribed the syndrome to an undiagnosed general disorder of nutrition.

Subsequent to the first report on this new syndrome John Caffey alone has reported six more cases, bringing to a total of 10 the cases he has actually had under his care. Others have reported their cases since Caffey and Silverman first published their report, and now within the English language literature there are at least 26 case reports, including the seven cases reported independently by F. S. Smyth, A. Potter and W. Silverman as "Periosteal Reaction Fever and Irritability in Young Infants; a New Syndrome" in the American Journal of Diseases of Children in 1946 and since acknowledged by Caffey as being the same syndrome described by him in 1945.

That the disease is uncommon is attested by six published articles based on one case such as this report and the fact that when this case was first seen it was not identified as to its true nature, although seen by several experienced colleagues. The widespread incidence of this disease is appreciated when one finds that the work of John Caffey was done in New York City, that of Smyth et al in San Francisco, and that cases have been reported from as far separated places as Utrecht, Netherlands, and China.

Infantile cortical hyperostosis occurs in infants and young children, having its onset from as early as three weeks to as late as 20 months, although the greatest number of cases have the onset before the age of three months. The disease is apparently self-

limited, as to date no form of treatment has seemed to affect the course of the disease. The duration of the disease has been reported as varying from eight weeks to nine months. Of the manifestations of the disease the cortical hyperostoses are the last to disappear. The prognosis has been invariably good.

The constant features of the disease are tender firm deep swelling of the soft tissues of the extremities, and/or over the mandible, scapula or calvarium, often appearing suddenly and persisting for some time, invariably associated with cortical thickening in the skeleton varying with individual cases as to number and extent of bones involved, but affecting the skull, mandible, clavicles, scapulas, ribs and long bones of the extremities frequently with massive cortical hyperostosis.

Radiographically this cortical hyperostosis is a subperiosteal overgrowth of the cortex often so extensive as to equal in combined thickness the normal diameter of the bone in the case of the diaphysis of a long bone (see Figure 3). The cortex alone is involved, and in the long bones it is the cortex of the diaphysis that is involved. Not all hyperostoses are associated with overlying soft tissue swelling, in particular the ribs. The mandible is frequently involved, and the overlying soft tissue swelling produces a characteristic facies with puffiness of the face over the mandible. The distribution and number of the bones involved varies in the individual case, but in all of the cases so far described the cortical hyperostoses have been confined to the calvarium, mandible, clavicles, scapulas, ribs and the long bones of the extremities. The clinical soft tissue swelling which is firm and deep without heat, discoloration or pitting edema may precede the demonstration of the cortical hyperostoses by several days.

Other manifestations of the disease which are not constant are fever, anemia, pleurisy when the ribs are extensively involved, leukocytosis, hyperirritability, pseudoparalysis and increased sedimentation rate.

\* Associate in Radiology, University of Kansas School of Medicine.

A number of reported cases have been subjected to surgical removal of tissue from the areas of cortical hyperostosis and deep soft tissue swelling. These have generally been reported as hyperplasia of the lamellar cortical bone without evidence of inflammation or subperiosteal hemorrhage, although the pathological description has varied as would be expected in this type of tissue. No specific etiology for this disease has been discovered from these pathological studies.

Scurvy has been ruled out from the radiographic and clinical aspect, although the cortical changes resemble the subperiosteal hemorrhages of scurvy. The clinical and radiographic manifestations are not those of congenital syphilis. Trauma has not been observed as the cause of the disease. Neoplasia is not considered because of the benign course of the disease. Infection cannot be eliminated as the etiology, although bacterial infection certainly has not been proven in any case. Virus infection and allergy have not been eliminated because of the difficulty to do so in such a limited series of cases so far studied.

To the present time no treatment tried which includes penicillin, sulfadiazine, high vitamin C intake and antihistamine has influenced the course of the disease.

One striking feature brought out by H. H. Shuman in his case and apparent in the reports of others is that despite the prolonged duration of the disease, often with fever and anemia, the development of the infant or child has proceeded unaltered. W. van Zeben has, in his three cases reported from the Netherlands, shown a familial occurrence in a sister, a brother and a second cousin at different times with an anterior bowing of the thickened tibia. This latter finding is a feature in our case (see Figure 1).

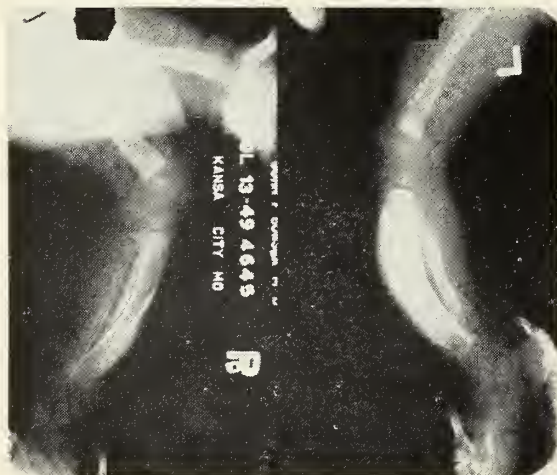


Figure 1. Both lower extremities lateral projection taken July 13, 1949. Patient was five weeks of age, and this was first radiograph made although legs had been fluoroscoped by family physician who noted the anterior bowing of the tibiae.

#### Case History

A. L. L., four months old female, born June 9, 1949, admitted October 7, 1949, dismissed October 12, 1949.

H. P. I. Patient F. T. N. D. birth weight seven pounds, eight ounces whose only abnormality was a forward bowing of the left shin. Fluoroscopy at home town was reported to be suspicious for fracture. Because of this, the baby was referred to an orthopedist July 13, 1949. X-rays taken then were suspicious for scurvy or some obscure pathology of long bones. Diet of whole milk with ascorbic acid and other vitamins was given. Orange juice was given but was discontinued because of a rash. Despite intensive vitamin therapy the abnormality spread to involve both upper extremities as well as the mandible. Swollen extremities were tender to pressure, but the baby could be handled in a normal fashion without difficulty. She has a good appetite, and is a happy normal acting infant.

P. H. Mother states that she does not like fruit and ate none during her pregnancy. Pregnancy blood test was satisfactory.

Physical Examination: Well developed and nourished infant, irritable crying with obvious forward bowing of the shins and enlargement of the forearms.

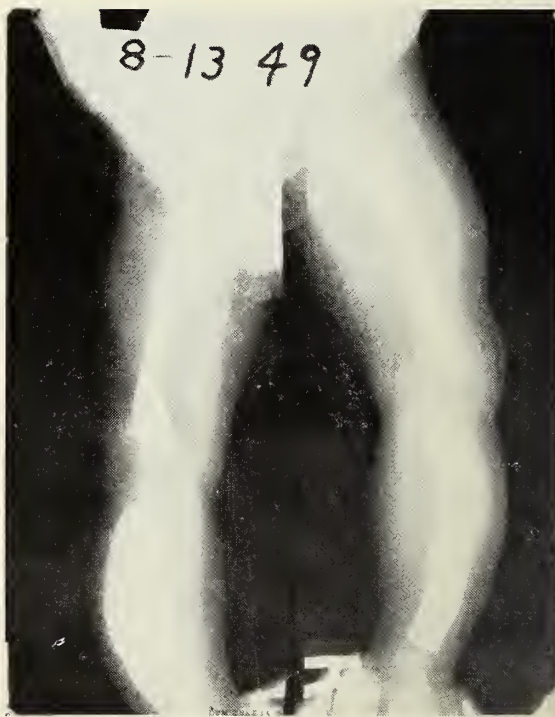


Figure 2. Both lower extremities lateral projection taken August 13, 1949. Age of patient nine weeks. Unimproved clinically, although on intensive antiscorbutic therapy. Comparison with Figure 1 shows but little change in the extensive cortical hyperostoses of the tibiae.



Head: Eyes and E.N.T. negative. Enlargements bilateral of body of the mandible.

Neck: Negative.

Chest: Lungs clear. Heart negative.

Abdomen: Umbilicus taped. Negative.

Neurological: Reflexes active.

Extremities seems to be tender, firm and fixed to bone by palpation.

Laboratory: Urinalysis negative.

	R.B.C.	W.B.C.	Hb	Gm	P.	Fil	Nf.	Lym.	E	Mono
10-7	3,550,000	13,000	66	10.2	33	32	1	66	0	1
10-11	3,920,000	13,100	72	11.2	31	31	0	63	2	4

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Hospital course was uneventful and no change was noted. Temperature on admission was 99.4, 98.6 thereafter for five days.

A. L. L. had been seen previously as an outpatient referred to the office on July 13, 1949, and radiographs of the lower extremities were made, of which Figure 1 is representative. Because of the unusual character of the case both clinical and radiographic x-ray films of the lower extremities made by the family physician one month later, after the patient had been on high vitamin antiscorbutic diet, were sent in and comparison made with the previous films (see Figure 2). Just prior to hospital admission both upper and lower extremities were radiographed, and Figure 3 shows the extent of the cortical hyperostoses of the bones of the upper extremities. The radiographs of the lower extremities, not shown, revealed progression of the disease to involve the right fibula and early healing of the cortical hyperostoses of the tibias with organization of the subperiosteal callus (hyperostoses). X-ray studies of the mandible while in the hospital on October 12, 1949, showed typical cortical hyperostosis of the body of

the right side. Subsequent x-ray studies of the mandible and upper and lower extremities on May 27, 1950, showed residual deformities of the long bones as a result of the organization of the cortical hyperostoses into the cortices, but no active cortical hyperostoses (see Figure 4).

Conclusion: Infantile cortical hyperostosis as described by John Caffey is a new clinical syndrome.

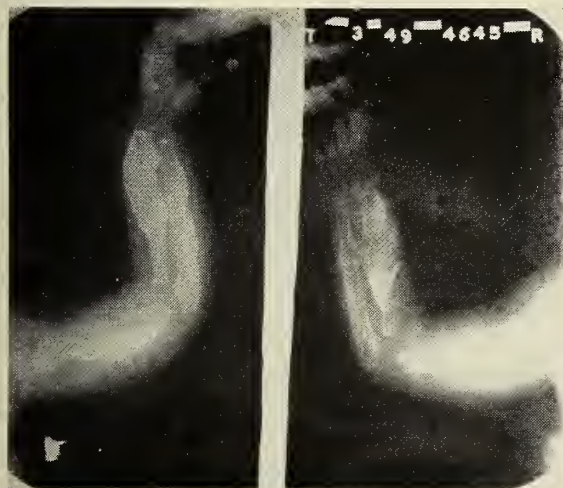


Figure 3. Both upper extremities taken October 3, 1949, at time of hospital admission while disease was still active.

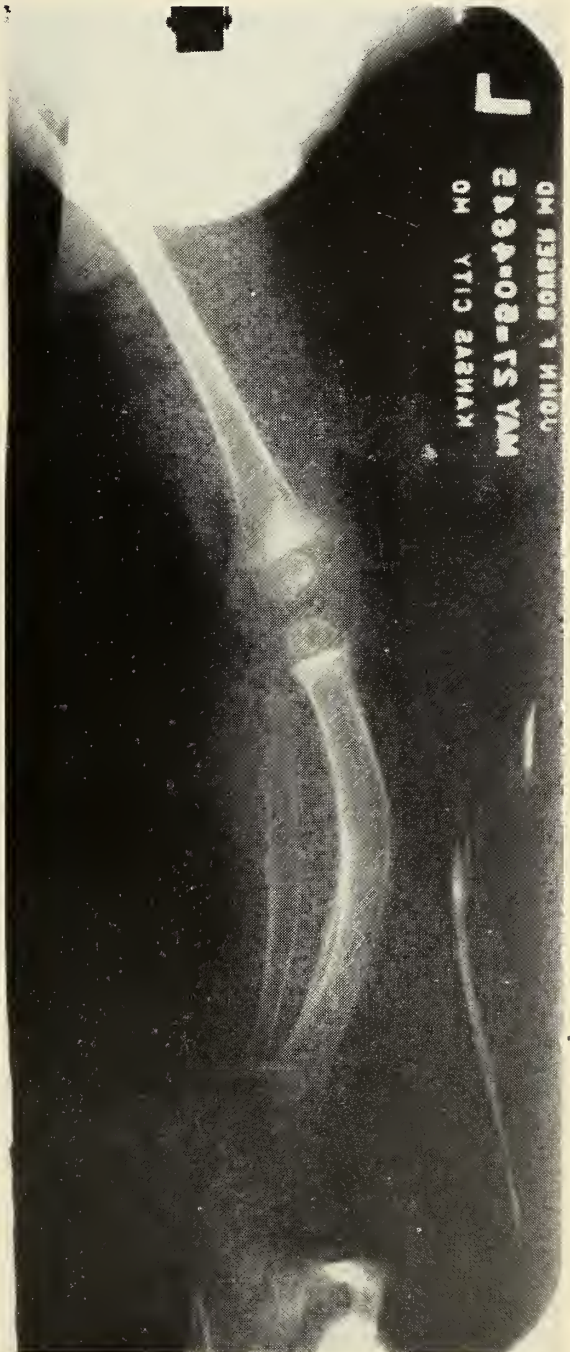


Figure 4. Left lower extremity at age one year. Patient is asymptomatic. Note degree of return to normal tibia but with residual anterior bowing.

Cases so far reported in the literature extend back to 1938, although the disease was first described by Caffey and Silverman in July, 1945.

Subperiosteal cortical hyperostoses of variable bones of the group made up of the calvarium, mandible, clavicles, scapulas, ribs and long bones of the extremities with or without associated deep soft tissue swelling are the principal and only constant findings in the disease.

The etiology of the disease is unknown, but scurvy, syphilis, trauma and neoplasia have been excluded, and bacterial infection, virus infection or allergy have not been established.

Another case of the disease is reported, and the literature detailing the reports of 26 cases of the disease has been summarized.

The disease to the present time has occurred in patients between the ages of three weeks and 20 months unless the anterior bowing of the tibia in our case reported to be present at birth and the demonstration of advanced cortical hyperostosis of both tibias at the age of five weeks represents the presence of the disease at birth.

The clinical course of the disease has varied between eight weeks and nine months, and the cortical hyperostotic changes persist beyond the period of clinical activity although ultimately no permanent deformity results.

All cases of the disease to date have recovered completely.

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### 1952 MEETING DATES CHANGED

Because of a conflict with another meeting being held in Kansas City in May, 1952, the dates of the 93rd annual session of the Kansas Medical Society have been changed from May 5-8, 1952, to April 27-May 1, 1952. Mark the new date on your calendar and plan to attend.

#### 93rd ANNUAL SESSION

Kansas City, Kansas

April 27-May 1, 1952



# Intracranial Aneurysms\*

James Hibbard, M.D., Ralph L. Drake, M.D., and Larry E. Vin Zant, M.D.

Wichita, Kansas

The rupture of intracranial aneurysms frequently causes sudden intracranial symptoms followed by death. The problem is not a new one, but in recent years an era of urgent scientific interest has appeared embracing the anatomical localization and the subsequent surgical removal of these lesions.

In the past many deaths caused by so-called vascular accidents would now be considered as due to ruptured aneurysms. One cannot forget numerous patients succumbing from bizarre fulminating intracranial lesions undiagnosed in the past and unverified through lack of an autopsy, who also undoubtedly died from ruptured aneurysms. These lesions previous to their rupture, unless large in size, have rarely been thought of or diagnosed as a certainty unless accompanied by an audible bruit, bone erosion or calcification of the sac.

The present era of interest in and scientific study of this subject dates primarily from the development of cerebral angiography first described by Moniz of Portugal. With this procedure the entire cerebral vascular system can be visualized on x-ray films and any defects can immediately be noted. Secondly, the present day common use of lumbar puncture in neurological conditions will reveal pure blood in case of a profuse subarachnoid hemorrhage and points usually to a ruptured aneurysm as the underlying lesion.

## Anatomical Localization of Aneurysms

Considering the definitive surgical treatment of a given aneurysm, its exact location and its route of exposure are highly important. All aneurysms are considered largely to be of congenital origin and to arise from the larger arteries lying in the subarachnoid spaces. As pointed out by Sheldon, Pudenz and Brannon<sup>1</sup> they tend to arise from the carotid half of the circle of Willis (anterior half of the circle). McDonald and Corb<sup>2</sup> found the carotid half of the circle involved in 75 per cent of a large series of patients. This figure is of great importance since the anterior half of the circle and its branches are accessible to a direct surgical attack. In 48 per cent of their cases the aneurysm arose from the internal carotid and the middle cerebral arteries. In 15 per cent the anterior cerebral and anterior communicating arteries were involved.

## Diagnosis Previous to Rupture

The serious problem which develops following

rupture of an intracranial aneurysm is shown by studying the mortality figures appearing in the literature. Magee<sup>3</sup> found that 52 per cent of 150 patients died during the primary hemorrhage. In 50 of the 98 survivors, recurrence of the bleeding took place and 32 of the patients died. They point out that many of the 44 per cent who survived were either partially or totally disabled from cerebral vascular changes. Hamby<sup>4</sup> reported similar figures in that 40 per cent of his series died during the first attack and 28½ per cent died during subsequent attacks.

These figures clearly indicate not only the seriousness of the disease, but also the importance of arriving at a diagnosis during the favorable period preceding the rupture. Unfortunately, there is no clear-cut clinical syndrome nor disabling symptom which points to the underlying disease until the sudden dramatic signs and symptoms of profuse spontaneous subarachnoid hemorrhage develop.

Poppen,<sup>5</sup> Sheldon and Pudenz,<sup>1</sup> and many others stress the importance of being prepared to combine arteriographic and pneumographic studies in certain intracranial suspects. Poppen states that since combining these two studies, many more aneurysms are being found, some of which were decidedly unsuspected.

Cerebral arteriography (Figure 1) can be carried out under local or sodium pentothal anesthesia and when combined with pneumoencephalography the same anesthesia may be used. Diodrast 35 per cent is now the universal contrast agent used in this country and may be injected percutaneously directly into the carotid artery or by the open method. Although the usual head x-ray unit may be used, special equipment which allows the rapid exchange of

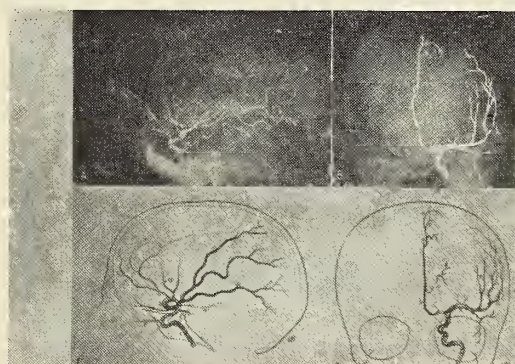


Figure 1. Lateral and postero-anterior cerebral angiograms showing the normal cerebral vascular pattern.

\*Presented September 24, 1950, at the meeting of the Kansas Chapter of the American College of Surgeons.

cassettes at one second intervals in order to obtain views of the different arterial and venous phases of the cerebral circulation with one injection of Diodrast is technically and physiologically superior.

Signs and symptoms suggesting an unruptured intracranial aneurysm are generally mild and meager. They are not always of localizing value, nor do they always specify an aneurysm rather than other space-occupying lesions.

Probably the most specific sign is the appearance of an intracranial bruit. This is generally present in patients with arterio-venous aneurysms. It may be heard by the patient as well as the examiner and is constant throughout the cardiac cycle. In arterial aneurysms it is heard only during systole. Vascular tumors may at times produce bruits indistinguishable from aneurysms.

A unilateral proptosis with conjunctival and retinal venous engorgement is commonly caused by arterio-venous aneurysms (carotid cavernous) and must be distinguished from intra-orbital tumors or tumor extensions.

Bone erosion and streaks of calcification can infrequently be seen on the x-ray film in patients harboring intracranial aneurysms. Erosion of the clinoid processes as well as the posterior portion of the orbit has been observed, as have calcium deposits in the wall of the aneurysm.

The third cranial nerve is commonly involved by direct pressure of the aneurysm sac or by hemorrhage. Its involvement is a valuable lateralizing sign. Direct pressure on the optic nerve or on the optic chiasm may produce visual field defects. Facial pain may be present as a result of the fifth cranial nerve pressure and generally involves the first and second branches. Lower cranial nerve involvement may occur as cited in Schwartz's<sup>6</sup> patient who was found to have an aneurysm of the left cerebral pontine angle.

Although headache has not been of great diagnostic value, most of the patients complain of either attacks of unilateral headache or periodic bouts of generalized headache previous to rupture.

From the above signs and symptoms it must be concluded that aneurysms must always be considered a possibility in one's search for intracranial lesions. Also arteriography should be used in combination with pneumoencephalography on the least suspicion of a vascular lesion if surgical intervention is to be carried out previous to rupture.

#### Diagnosis Following Rupture

In many cases there is a history of physical exertion, straining at stool or on coughing, etc., which apparently provokes the sudden rupture of the sac. Then, one is immediately faced with a serious prob-

lem. The degree of increased intracranial pressure depends upon the amount and character of the bleeding and its persistence. If active bleeding continues, the patient will rapidly become comatose and die. The primary symptom is usually sudden, with severe headache followed by vomiting, marked vertigo, stiff neck, drowsiness, stupor and coma. Chills and fever are at times present, as well as convulsions, cranial nerve paralysis and hemiplegia. At times the diagnosis may be confused with meningitis or encephalitis until gross blood is obtained by lumbar puncture.

Although cerebral angiography must be done for localization there appears to be some disagreement as to the proper interval one should wait following the initial hemorrhage. Some writers insist that arteriograms should be made immediately, and others after the cerebro-spinal fluid becomes xanthochromic. A more conservative group allows the patient to fully recuperate, pending a possible craniotomy.

It has been our policy to delay arteriographic studies until the spinal fluid is xanthochromic, generally about six or seven days. After reviewing our cases at Wesley Hospital over the last three years, we believe a somewhat different policy should be adopted. Fifteen patients were admitted during this three-year period with a 46.6 per cent mortality. Of the seven deaths, three were admitted and died within 24 hours, and one died within 24 hours following her primary head pain, although she had been hospitalized for other causes for more than a week. Since we personally attended these patients, their clinical course is still vividly impressed upon our minds. Since this group showed a rapidly declining course, arteriography and surgical intervention, although heroic, should have been considered as an emergency. Their initial symptoms were exceedingly severe and their impending coma rapid—so rapid that one could almost predict a fatal outcome with certainty.

Of the other three deaths, one was scheduled for surgery and died from a recurring hemorrhage following a severe transfusion chill. The other two were not seen by the neurosurgeons. One died five days following admission, after being transferred from an out-of-town hospital two weeks following the initial hemorrhage, the third died 15 days following rupture, but was never in good physical condition on account of pre-existing cardio-renal damage. This latter group is identified by a decidedly less acute course and may be prepared for selective study and surgery, although they must not be indefinitely postponed.

#### Operative Treatment

The surgical treatment of intracranial aneurysms



may be considered as either a direct or an indirect approach.

In the direct approach the aneurysmal sac may be completely excised, the stalk of the aneurysm may be occluded with silver clips, or the sac may be trapped between clips. The technical details of operation will not be discussed in this paper, except to stress the importance of attempting to attack the sac directly without compromising the major arterial pathways.

In the indirect approach the blood supply is occluded at some point proximal to the aneurysm. Ligation of the common carotid artery in the neck decreases somewhat the sac pressure, since the cross circulation between the two external carotids maintains an immeasurable amount of flow through the aneurysm. Ligation of the common and external carotid, semi-distally, is less dangerous than common and proximal external carotid ligation because it preserves some cross circulation between the external carotids. Ligation of the internal carotid in young individuals probably decreases the flow and pressure to the greatest extent, and when combined with intracranial distal clipping serves adequately as a trap.

Arterio-venous aneurysms present somewhat different problems and at times are exceedingly difficult to operate technically. Block lobe or near lobe resections which include the aneurysm simplify the procedure. We wish to present a short summary of such an aneurysm cured by block or lobe resection.

The patient, a 30-year-old male, was admitted to Wesley Hospital following a sudden severe headache and unconsciousness. Two weeks previously at 5:00 a.m. he was awakened by an excruciating pain in the top of his head. He became unconscious in about one hour and remained so for 60 hours. He was admitted to Veterans' Hospital, where he was treated by complete bed rest, and since the spinal fluid showed gross blood, numerous spinal drainings were performed. During his stay at Veterans' Hospital he was stuporous, but could be aroused on stimulation. He was transferred to Wesley Hospital for further study.

On examination he would answer questions, but was drowsy, confused and totally disoriented. The neurological examination was negative, except for a 1-2 papilledema, a third cranial nerve paralysis on the right and a spastic hemiparesis in the right upper and lower extremities. Lumbar puncture showed xanthochromic spinal fluid under increased pressure of 280 mm.

With this history and the findings, a diagnosis of intracranial aneurysm with subarachnoid hemorrhage was made.

On November 11, 1948, a left cerebral angiogram

(Figure 2-B) was made which showed an aneurysm (thought to be arterio-venous in character) with rupture into the right frontal lobe. Subsequently, ventriculograms were performed, showing a right frontal space-occupying lesion, with a shift of the ventricular system to the left.

On November 15, 1948, following the ventriculograms (Figure 2-A) a right frontal osteoplastic bone flap was turned down under intratracheal anesthesia. On inspection there was a greenish exudate with a thin membrane overlying the frontal lobe and extending to its inferior surface. The frontal lobe was bulging and the convolutions were flattened. On cannulating the frontal lobe, a large, partially liquefied hematoma was encountered. Believing that this was a ruptured arterio-venous aneurysm, the right frontal lobe was resected just anterior to the frontal horn of the ventricle. A fairly large sized artery leading to the hematoma was doubly clipped early in the dissection.

The patient experienced an uneventful convalescence and was discharged on his 11th post-operative day. Since then he has returned to work and has no serious residuals.

*Comment:* According to the history and physical findings this patient could have had an aneurysm of the carotid circle circulation, but as the arteriograms demonstrated, an arterio-venous aneurysm was the obvious lesion. The third nerve paralysis on the right lateralized the lesion to the right, irrespective of his ipsilateral hemiparesis. Block and lobe resection, including the hematoma and the fistula, worked admirably in this case, insuring an almost dry field and relatively simple operative procedure.

*Conclusions:* Intracranial aneurysms with or without subarachnoid hemorrhage may be considered to be relatively common in occurrence. Untreated cases show a high mortality rate, as well as a high disability rate.

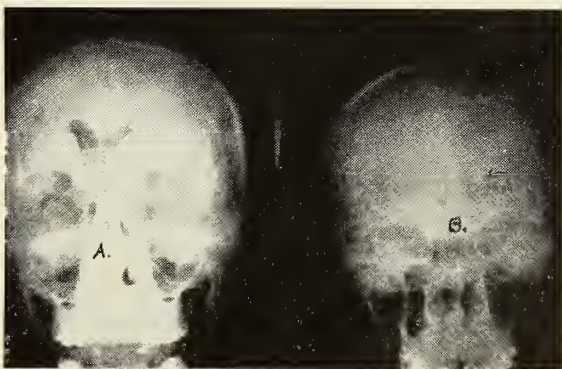


Figure 2. 2-A—Ventriculogram showing a shift of the ventricles to the left with an oblique third ventricle. Septum pellicudum is shifted more than third ventricle and anterior horn on the right is absent. 2-B—Left cerebral angiogram. Crossing over of diodrast into ruptured aneurysm in right frontal lobe.

The importance of being on the alert for their presence and, when suspected, the combining of cerebral arteriography with pneumoencephalography is stressed.

A patient with an arterio-venous aneurysm with rupture both into the right frontal lobe and the subarachnoid space is reported with a successful block excision of the frontal lobe containing the aneurysm.

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## Abdominal Distention: Prevention and Treatment With Stigminene Bromide\*

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Due to the many causes of postoperative ileus listed by various authors, we come to the conclusion that the etiology is still indefinite. Some of the factors listed as possible etiology are as follows: emotional instability, peritoneal irritation, inflammation in adjacent organs, rough handling of intestines and reflex stimulation, via the sympathetics.

The methods of treatment, too, have become as numerous as the causes. To mention a few, we have used cathartics, enemas, hot stupes, colon tubes, diets, the Miller-Abbott, Cantor and Levine tubes, as well as various types of suction apparatus.

Due to the seriousness and frequency of paralytic

ileus after abdominal surgery, this paper is presented with statistics to outline a simple method of reducing the occurrence, as well as the treatment, of an established ileus using stigminene bromide. It was used in all types of surgery except in cases of mechanical obstruction and known asthmatics.

A series of 33 cases was used in which stigminene bromide was omitted. See Table I.

Results: Five cases had no complaints; 16 had mild to severe gas pains; 12 had gas pains with moderate to severe distention.

Stigminene bromide was then used in 10 cases giving a total of six doses intramuscularly as follows: One ampule immediately after operation followed by one ampule every three hours. Results are shown in Table II.

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TABLE I

Operation	No. of Cases	Results
Pan-hysterectomy	3	Mild to severe distention, gas pains
Cholecystectomy	2	Moderate to severe distention, gas pains
Excision of Kidney Cyst	1	Severe distention, gas pains
Nephrectomy	1	Moderate distention, gas pains
Nephrostomy	1	Moderate distention, gas pains
Appendectomy	2	Mild distention, gas pains
Oophorectomy-Appendectomy	1	Mild distention, gas pains
Whipple	1	Severe distention, gas pains
Pan-hysterectomy	14	Mild to severe gas pains
Exploratory Laparotomy	1	Mild gas pains
Dilatation and Curettement	1	Mild gas pains
Pan-hysterectomy	3	Good
Oophorectomy	1	Good
Appendectomy	1	Good



TABLE II

Operation	No. of Cases	Results
Ventral Herniorrhaphy	1	Mild distention, gas pains
Cholecystectomy	1	Moderate distention, gas pains
Cholecystectomy-choledochostomy	1	Mild distention, gas pains
Pan-hysterectomy-appendectomy	1	Mild distention, gas pains
Pan-hysterectomy-appendectomy	2	Severe gas pains
Closure of eventration	1	Moderate gas pains
Cholecystectomy	1	Good
Exploratory laparotomy	1	Good
Pan-hysterectomy-appendectomy	1	Good
	10	

Not being pleased with these results, we began another series giving a total of 12 doses and increasing the interval of time between doses to four hours, with the results shown in Table III.

Results: After increasing the number of doses and time interval, our results were gratifying, as can be seen from the above table. Medication was discontinued in one case due to an increase in the blood pressure from 126/72 to 200/100; however, the patient was a known hypertensive and carried a blood pressure of 180/90 before operation. The ileo-transverse colostomy was performed on a 78-year-old colored female for adenocarcinoma of the cecum. The distention persisted for 11 days in lieu of therapy.

All cases of moderate to severe distention were treated with stigminene bromide in the following manner: one ampule followed in 30 minutes by a saline enema. One hour after the enema another ampule of stigminene bromide was administered, then one ampule every three hours for a total of six to 10 doses. A Levine tube and gastric suction were used whenever severe distention was present. The results in all cases were excellent, the patients being completely relieved within 12 to 18 hours.

Another factor observed in most postoperative patients being treated prophylactically with stigminene bromide was their ability to urinate spontaneously, thus practically eliminating catheterization. We noted, too, that a few of the treated patients developed liquid stools, which in no case was severe. This was compensated for by the addition of 500 cc. to 1,000 cc. of fluid to their daily requirements.

Summary: Stigminene bromide was used prophylactically in a total of 49 patients and the results reported. Fifteen cases of established postoperative ileus were treated with complete relief in 12 to 18 hours. A routine method for prevention and treatment of postoperative ileus is presented. Catheterization postoperatively was almost eliminated. Liquid stools during administration of the drug should be compensated for by adding fluids to daily requirements. Stigminene bromide should not be administered to asthmatics and patients with mechanical obstruction.

We wish to thank William R. Warner and Company, Inc., and Mr. W. J. Havey for supplying the necessary amount of stigminene bromide for this series of cases.

TABLE III

Operation	No. of Cases	Results
Ileo-transverse Colostomy	1	Severe distention, gas pains
Pan-hysterectomy	1	Discontinued after 2 doses due to an increase of B.P. from 126/72 to 200/100
Pan-hysterectomy-appendectomy	1	Slight gas pains
Pan-hysterectomy	4	Slight gas pains
Cesarean Section	1	Slight gas pains
Exploratory Laparotomy	1	Slight gas pains
Pan-hysterectomy	14	Good
Cholecystectomy-choledochostomy	1	"
Cholecystectomy	5	"
Cesarean Section	1	"
Appendectomy	5	"
Salpingo-oophorectomy	2	"
Ventral Herniorrhaphy	1	"
Oophorectomy	1	"

# The Diagnosis and Treatment of Subdural Hematomas in Infants\*

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Infants under a year of age who have bloody fluid in the subdural space have a clinical course differing markedly from that seen in older children and adults.<sup>1</sup> Experience with nine infants, all of whom were admitted to the University of Kansas Medical Center during 1950, amply demonstrates the differences which age makes in the diagnosis and treatment of this condition in infants. A knowledge of these differences is essential if a favorable outcome for the infant is to be obtained.

The difficulties in making a correct clinical diagnosis are brought out in the data presented in Table I. It can be seen that a subdural hematoma was diagnosed in only one of the nine infants either before or at the time of admission to this hospital. Some disturbance involving the central nervous system of

these infants was considered in six of the remaining infants, and in two others the referring or admission diagnoses were upper respiratory infection, inadequate feeding and worms.

The failure to consider subdural hematoma can be explained in part by the symptoms elicited from the parents, who emphasized vomiting, irritability and weight loss—symptoms which occur with great frequency in the large number of infants in the general population with feeding problems and infections. The lack of a history of trauma in eight of the nine infants undoubtedly contributed to the difficulty in considering subdural hematoma as a possible diagnosis. In this connection it is significant that the one infant with a history of trauma (Case 8, Table II) had no known fractures while in the eight infants who had no history of trauma there were four who had fractures of various bones including

\*From the Department of Pediatrics, University of Kansas Medical Center.

TABLE I

The referring or admission diagnoses, symptoms and physical signs in 9 infants with subdural bloody fluid.

Referring or admission diagnoses		Symptoms as elicited from the parents		Physical signs on admission	
Diagnoses	Pts.	Symptoms	Pts.	Physical signs	Pts.
Common cold	1	Vomiting	6	Bulging ant. font.	7
Subdural hematoma	1	Irritability	6	Retinal hemorrhage	6
Hydrocephalus	1	Convulsions	4	Hyperactive reflexes	4
Meningitis		Weight Loss	3	Fever	4
Encephalitis		Hydrocephalus	2	Enlarged head	3
Intracranial hemorrhage		Loss of vision	2	Papilledema	3
Meningitis	1	Lethargy	1	Spasticity	3
Brain tumor		Paralysis	1	Anisocoria (unequal pupils)	2
Congenital cerebral defect				Anemia	2
Birth injury				Malnourished	1
Fractured humerus	1			Optic atrophy	1
Fractured skull				Paralysis	1
Inadequate formula	1				
Worms					
Hydrocephalus	1				
Subdural hematoma					
Congenital syphilis					
Cerebral dysplasia	1				
Encephalitis					
Cerebral anoxia					
Brain tumor	1				
Meningitis					



three fractured skulls. Inability to elicit a history of trauma from the parents of the four infants with fractures or for that matter from any of the eight infants is the more remarkable considering the frequency with which most infants fall or are dropped.

As shown in Table I, the physical examination of these infants is of great importance in making a correct clinical diagnosis. A bulging anterior fontanelle was present in seven of the nine infants. The fact that it was not universally present is of equal significance, indicating that there is no single pathognomonic sign of subdural hematoma. The presence of fever in four infants undoubtedly led to a consideration of meningitis and the performance of a spinal puncture. A negative spinal fluid in the presence of a bulging fontanelle should routinely lead one to doing subdural taps. One of the most helpful of physical signs was the presence of retinal hemorrhages. Six of the nine infants had such hemorrhages. Fundoscopic examination of infants is not easy, but the hemorrhages are usually so numerous it is relatively easy to observe them in the fundi. The other physical findings in this group of nine infants were so infrequently encountered as to make them of relatively little help in considering the correct diagnosis.

The diagnosis of subdural hematoma in infants consists of two important steps. First, the physician must consider this possibility in any infant with

unexplained symptoms and, second, he must be prepared to do subdural taps. The latter is the only single means by which the diagnosis can be established. Technically it is easier to do than a lumbar puncture. After shaving and prepping the anterior half of the scalp, a 21 gauge spinal needle three inches long with stylet in place is inserted through the coronal suture far enough lateral to miss the sagittal sinus. The familiar "give" is encountered as the needle penetrates the dura. The stylet is removed and a syringe attached, so that gentle suction may be applied. If more than five c.c. of fluid is obtained and if this fluid has a high protein content and has evidences of blood, a subdural effusion is present. The subdural taps are done bilaterally. Failure to obtain typical fluid from either side eliminates for all practical purposes the diagnosis of a subdural hematoma, although very occasionally they occur in areas that can not be reached by tapping through the coronal suture.

The amount of fluid and the frequency of the subdural taps done on each infant are shown in Table III. One infant, Case 6, had taps done on the first and seventh days in the hospital and had an uneventful recovery without a craniotomy being done. One other infant, Case 3, had bilateral subdural effusions; daily taps for 10 days on the left side were sufficient to "dry up" that side while the opposite side continued to yield fluid for a total of

TABLE II

The relationship of the history of trauma and the evidence of trauma as seen in the x-ray.

Case No.	Age	X-rays	X-ray diagnosis	History of trauma
No. 1	5 mos.	Skull Cervical spine Chest and long bones	Separation of sutures No fracture No fracture	No
No. 2	6 mos.	Skull Long bones	Separation of sutures Fracture of rt. fibula	No
No. 3	8 mos.	Skull Chest and long bones	Separation of sutures No fracture	No
No. 4	2½ mos.	Skull Chest, clavicles, humeri Left shoulder girdle	Fractured skull No fracture No fracture	No
No. 5	4 mos.	Skull	No fracture	No
No. 6	5 mos.	Skull Complete bones	No fracture No fracture	No
No. 7	8 mos.	Skull Chest Rt. upper and lower extremity	Fractured skull Fractured 3rd & 4th ribs No fracture	No
No. 8	2½ mos.	Skull	Separation of sutures No fracture	Yes
No. 9	2 mos.	Skull Long bones	Fractured skull No fracture	No

31 days, and a subdural hematoma was found at operation.

These two cases illustrate the fact that some subdural collections of bloody fluid can be "dried up" by repeated subdural taps, although this is not to be expected except perhaps in infants whose symptoms have been present for only a few days. In a third infant who died on the ninth hospital day, Case 2, no membranes were found at autopsy in spite of the fact that typical xanthochromic fluid had been drawn off repeatedly twice daily; the cerebral veins were observed at autopsy to be thrombosed.

The danger of removing too much fluid at one time by a subdural tap is demonstrated by Case 5; this infant died 20 minutes following the removal of 105 c.c. of fluid from the left side and 140 c.c. from the right. The occasional clearing of a subdural effusion by tapping the subdural space makes the decision as to the time of operation difficult. Many of the infants are too critically ill to tolerate an extensive procedure immediately. Nothing is lost by waiting a few days before proceeding with craniotomy, so that the nutrition of the infant can be improved and until all acute symptoms of shock, anemia and dehydration have disappeared. Removing small amounts of fluid daily or twice daily seems to help restore the infant to a better clinical condition for surgery in many instances.

In all six infants on whom craniotomies were done subdural hematomas and membranes were

found. Two of the six infants made good recoveries following operation, Cases 3 and 4. Two of the remaining three infants, Cases 7 and 9, survived the operation, but had severe mental retardation; the brains of both infants were observed to be abnormally small at the time of operation. One infant, Case 8, died during the operation; no explanation for the infant's death could be found. Another infant, Case 1, had a successful craniotomy on the left side, but died suddenly two months postoperatively, and at autopsy a fresh blood clot was found on the operated side and fluid was obtained on the unoperated side.

The outcome for the infant was dependent very largely on the time that elapsed between the occurrence of the first symptom and admission to the hospital, Table IV. Four infants had symptoms lasting from two to eight months before admission to the hospital, Cases 2, 5, 7 and 9; two of the infants died and the other two were left with severe mental retardation. Of the five infants whose symptoms had been present from one to eight days before admission, three had excellent results, one died during the closing moments of the operation for reasons that could not be determined, and another died several weeks after removal of a subdural membrane, the autopsy disclosing a large amount of subdural fluid but no membrane on the opposite side and a fresh subdural blood clot on the side of the operation.

TABLE III

Amount of fluid removed and frequency of subdural taps in relation to the operative procedure and outcome.

Case No.	Amount of fluid aspirated	Frequency of aspirations	Character of fluid	Surgery Day Op.	Membrane removed	Outcome
No. 1	Rt. None Lt. 10 to 20 c.c.	daily for 6 days	bloody changing to xanthochromic	7th	left	died
No. 2	Rt. 20 to 30 c.c. Lt. 20 to 30 c.c.	twice daily for 9 days	bloody changing to xanthochromic	no		died on 9th day
No. 3	Rt. 25 to 30 c.c. Lt. 25 to 30 c.c.	daily, 31 days daily, 10 days	bloody changing to xanthochromic	32nd	right	recovery
No. 4	Rt. 30 to 50 c.c. Lt. 30 c.c.	daily every 3 days	bloody changing to xanthochromic	8th 18th	right left	complete recovery
No. 5	Rt. 140 c.c. Lt. 105 c.c.	once once	xanthochromic	no		died following first tap
No. 6	Rt. 10 c.c. Lt. 15 c.c.	1st and 7th day	bloody	no		complete recovery
No. 7	Rt. 40 c.c. Lt. 40 c.c.	daily daily	bloody	15th	left	severe mental retardation
No. 8	Rt. 10 c.c. Lt. 15 c.c.	once every 2 days	bloody	16th 9th	right left	died during surgery
No. 9	Rt. 15 c.c. Lt. 15 c.c.	daily daily	bloody changing to xanthochromic	12th 19th	left right	severe mental retardation



### Discussion

The physician must be prepared to perform subdural taps on infants with only the slightest suspicion if this important and serious lesion is to be diagnosed early. There are certain clear cut indications for doing subdural taps, such as a bulging fontanelle, retinal hemorrhages and an increasing size of the head, but there are some infants whose symptoms will be vague and whose physical findings will suggest only some central nervous system involvement. The situation in regard to the performance of subdural taps is akin to the present practice of doing lumbar punctures in this young age group. Unless one is prepared to do spinal punctures on a large number of infants who do not have clear cut signs of meningitis, the early diagnosis of meningitis will be missed. There are no dangers in doing subdural taps if the usual precautions are observed. They are safer to do than lumbar punctures and are more easily performed.

An interesting and important recent observation is the frequency with which subdural effusions are encountered in infants with meningitis.<sup>2, 3</sup> Some of these infants have been observed to develop typical subdural hematomas with membranes. It is now common practice to do subdural taps on any infant with meningitis who is not responding to antibiotic treatment as expected. Some of the symptoms exhibited by these infants are similar to those observed in the present group—namely, fever, irritability, lethargy, paralysis and vomiting.

The treatment of subdural hematomas in infants consists in removing the membranes which encapsulate the fluid. However, this apparently need not be the only method of treatment, as some of the infants respond satisfactorily to frequent subdural aspiration with "drying up" of the effusion and with good clinical recovery. It is the practice in this clinic to continue subdural aspiration daily or twice daily,

withdrawing not more than 35 to 40 c.c. at a time for several days before resorting to craniotomy. This permits the infant to be put in better condition for the surgical procedure, and if the fluid has not diminished or "dried up" in a week or 10 days, it is likely that membranes are present and will need to be removed. Craniotomy and removal of the membranes enclosing the hematoma has not solved the difficulties encountered in the infant with a long standing hematoma who has an atrophic brain. The brain does not have the capacity to expand and occupy the space, amounting to 1000 c.c. or more in some infants, occupied by the subdural fluid. The only solution for these cases is early diagnosis and treatment before the hematoma has become so enlarged.

### Summary

The clinical course of infants under a year of age with subdural effusions is bizarre. The symptoms are protean. The physical findings are extremely variable. The only method of establishing the diagnosis is by doing subdural taps. This procedure is safer and easier to do than a lumbar puncture. Craniotomy with removal of the subdural membranes will be necessary in the great majority of cases. Occasionally a bloody subdural effusion can be cleared by doing repeated subdural taps.

### Case Reports

*Case 1.* D. E., an infant five months old, was admitted with a history of vomiting for three days. The day of admission she had intermittent periods of irritability and lethargy. The mother became worried because "she has never acted like this before and the sleepiness bothers me." The past history was not remarkable. There was no history of trauma, recent or otherwise.

The infant was very irritable. The temperature was 99.4 degrees rectally. The anterior fontanelle was bulging and tense and there were petechial hem-

TABLE IV

Duration of symptoms in relation to infant mortality and morbidity.

Case No.	Earliest symptom	Time elapsed between appearance of symptom and admission to the U.K.M.C.	Outcome
No. 1	Vomiting	3 days	Died
No. 2	Enlarged head	6 months	Died
No. 3	Vomiting	8 days	Recovery
No. 4	Paralysis	1 day	Complete recovery
No. 5	Convulsion	2 months	Died following subdural tap
No. 6	Vomiting	1 day	Complete recovery
No. 7	Irritability	8 months	Severe mental deficiency
No. 8	Irritability	5 days	Died during surgery
No. 9	Irritability	2 months	Severe mental deficiency

orrhages in the fundus of the right eye. There was no anemia. X-rays of the skull revealed separation of the sutures. There were no fractures. X-rays of the long bones were also negative for fractures.

Ten c.c. of bloody fluid with a protein content of 1.01 gms. per cent was removed from the left side and none was obtained on the right by subdural taps. Subsequent taps were done with removal of 10 to 22 c.c. of fluid daily from the left side. After the fifth day the fluid changed from bloody to xanthochromic. A craniotomy was done on the seventh hospital day and the left subdural membrane was removed. Post-operatively there was a collection of fluid in the extra dural space which was thought to be due to a leakage of spinal fluid at the operative site in the dura. She was subsequently operated upon and the dura closed. Two months after the first operation she was readmitted in a moribund state and died. During the short hospitalization bilateral subdural taps were done. The left side, which was the side operated upon, was dry. Twenty-five c.c. of bloody fluid was aspirated from the right side on admission and the same amount one and one-half hours later. Following the second tap there was considerable seepage through the needle puncture wound.

Post mortem examination showed a fresh hematoma on the operated side but lower than the one which was removed earlier. There was bloody fluid on the right side but no subdural membranes.

*Case 2.* J. M., an infant six months old, was admitted because of an enlarged head and loss of vision. The birth weight was six pounds and seven ounces. The labor was not remarkable. The patient's head was thought to be enlarging rapidly since birth. Screaming and increased irritability were noted two weeks before admission. One week later the infant was thought to have no vision, and four days before admission convulsions occurred.

The temperature was 100.8 degrees rectally on admission. The head circumference was 48.5 cms. He was very irritable and screamed intermittently. The anterior fontanelle measured eight by eight cms., but the tension was not remarkable. There were bilateral retinal hemorrhages and papilledema. X-rays of the skull showed separation of the sutures. There was a green-stick fracture of the right fibula.

Bilateral subdural taps were done and 15 cc. of bloody fluid were removed from each side. The protein content was 541 mgm. per cent. Subsequent taps were done twice daily with removal of 20 to 30 c.c. of fluid, which changed to xanthochromic character after five days. No noticeable change was noted in the presenting symptoms. Nine days after admission he suddenly and unexpectedly died. Post-mortem examination showed 125 c.c. of bloody sub-

dural fluid but no subdural membrane. The cerebral veins over the cortex were thrombosed.

*Case 3.* J. B., an infant eight months old, was admitted with the complaint of vomiting of eight days duration. There was no history of trauma. He was perfectly well until three months before admission when projectile vomiting was first noted. This was intermittent for a period of two to three days and was followed by a free period of a week or more, only to be followed in turn by vomiting. Intermittent vomiting continued until eight days prior to admission at which time the vomiting became persistent. Increased irritability was also noted.

The temperature was 99.6 degrees rectally. The head circumference was 45 cms., and the anterior fontanelle tense and bulging and measured 7 x 5 cms. He was active, alert and playful. Bilateral papilledema and retinal hemorrhages were observed. The tendon reflexes were hyperactive. X-rays of the skull showed marked separation of the sutures.

Subdural taps were done and 25 c.c. of bloody fluid with a protein content of 680 mgm. per cent were removed from each side. Subdural taps were done daily with removal of 25 to 30 c.c. bloody fluid bilaterally for 10 days. Thereafter fluid was aspirated only from the right side. The left side became "dry." The fluid changed from a bloody color to xanthochromic at about the seventh day, this change being a gradual one. A right craniotomy was done on the 32nd hospital day and the subdural membrane removed. His course subsequent to the operation has been free of complications.

*Case 4.* K. M., an infant two and one-half months old, was admitted because he was unable to move his left upper extremity. The onset of the symptoms was the day of admission. There was no history of trauma; the mother, however, had left the infant for a short time with a sibling two years old.

The temperature was 100 degrees rectally. The head circumference was 39 cms. and the anterior fontanelle measured 2 x 2 cms. There was a left lower facial palsy. He was unable to move his left shoulder, arm and forearm. He did, however, move the fingers of the left hand. The rbc were 2,740,000 and there was 8.7 gm. of hemoglobin. X-rays of the skull showed a fracture in the posterior fossa. There was separation of the sutures. There was no x-ray evidence of a fracture of the clavicles or the upper extremities.

Subdural taps were done bilaterally and 55 c.c. of bloody fluid were removed from the right side. The protein content was 2.7 gms. per cent. No fluid was found on the left side. Bilateral subdural taps were done daily thereafter and 30 to 50 c.c. of bloody fluid, which changed to a yellow color, was aspirated from the right side. Fluid of the same character was



aspirated from the left side on two occasions only. A craniotomy was done on the eighth hospital day and the right subdural membrane was removed. A left craniotomy was done 10 days later and a subdural membrane was removed. Following the operation no more subdural fluid collected. He was last seen four months later and had made a complete recovery.

*Case 5.* B. R., an infant four months old, was well until seven weeks of age at which time he had a high fever and was diagnosed as having pneumonia. Following this infection he began having convulsions and became spastic. The convulsions became more frequent and severe shortly before admission. There had been a moderate amount of vomiting and weight loss. The parents also questioned his ability to see. The birth weight was seven and one-half pounds. The labor was regarded as not being remarkable.

The temperature was 98.6 degrees rectally. The head circumference was 39 cms., and the anterior fontanelle was not tense or bulging. He was hypertonic, and spastic contractions of all the extremities were noted. The fundi showed optic atrophy bilaterally. X-rays of the skull were considered negative.

Bilateral subdural taps were done with removal of 105 c.c. of yellow fluid from the left side and 140 c.c. from the right side. The protein content was 2.4 gms. The infant died 20 minutes following the taps. Postmortem x-rays showed a "rather classical picture of subdural air." Postmortem examination showed bilateral subdural hematomas covering nearly the entire cerebral cortex and extending down to the inferior surface of the cerebrum bilaterally. Subdural membranes were present. The hematomas contained approximately 100 c.c. of xanthochromic fluid bilaterally. There was flattening of the convolutions with apparent pressure atrophy. The brain weighed 380 gms.

*Case 6.* V. T., an infant five months old, was admitted because of projectile vomiting and a bulging anterior fontanelle that had been present for one day. Irritability was also associated with the vomiting. There was no history of trauma.

The temperature was 100 degrees rectally. The head circumference was 43 cms. and the anterior fontanelle was tense and bulging. She was unusually irritable. It was noted that there was no searching movement of the eyes. They appeared to be fixed straight ahead. The right pupil was larger than the left. There were bilateral retinal hemorrhages. The tendon reflexes were hyperactive. X-rays of the skull were considered negative.

Bilateral subdural taps were done and 15 c.c. of bloody fluid with a protein content of 7.8 gms. were

removed from the left side. The right side was negative for fluid. Following this procedure, there was marked alleviation of the symptoms. Repeat taps were done on the seventh hospital day and eight c.c. of thick bloody fluid were aspirated from the left side and 10 c.c. of thin bloody fluid were removed from the right side. Because of the apparent complete recovery no further taps were done. She is now 11 months old and well in every respect. It appears as though craniotomy will not be necessary.

*Case 7.* J. P., an infant eight months old, was admitted because "his head is not shaped right." His birth weight was seven pounds and five ounces. The labor was not thought to be remarkable; however, the infant remained in an incubator for eight days following delivery. He was described as always being nervous. He had never been able to hold his head up, turn over or sit up. He had been vomiting for one month prior to admission and had lost considerable weight. There was no history of trauma, either recent or in the past.

The temperature was 99 degrees rectally. The head circumference was 46.0 cms. and the anterior fontanelle was tense and bulging. He was markedly malnourished. General spasticity was noted. He did not follow light with his eyes. The pupils were unequal and retinal hemorrhages were present bilaterally. X-rays of the skull showed fractures of both parietal bones and spreading of the sutures. Chest x-rays showed fractures of the third and fourth ribs anteriorly at the costo-chondral junction with callus formation.

Bilateral subdural taps were done and 40 c.c. of reddish-brown fluid with a protein content of 686 mgm. per cent were removed from each side. Taps were repeated daily with removal of 40 c.c. of bloody fluid bilaterally until a craniotomy was done on the 15th hospital day and the left subdural membrane was removed. Approximately 1250 c.c. of dark colored fluid were removed and at surgery it was noted that the brain was abnormally small. Postoperatively subdural taps were required every other day in order to decompress the brain and prevent vomiting. He was dismissed after the vomiting ceased, which was 14 days postoperatively. A favorable prognosis was not anticipated. He has not been seen since dismissal.

*Case 8.* S. W., an infant two and one-half months old, was well until five days before admission at which time he became irritable and began vomiting, which continued to admission. Convulsions preceded the admission by two days. An older sibling struck the patient on the left side of the head with a tennis shoe one week before admission.

The temperature was 98.4 degrees rectally. The head circumference was 42.0 cms. and the anterior

fontanelle was tense and bulging. Papilledema and retinal hemorrhages were present bilaterally. X-rays of the skull were considered negative.

Bilateral subdural taps were done and five c.c. of bloody fluid were removed from the left and 10 c.c. from the right. The protein content of the fluid was 340 mgm. per cent. Subsequent taps were done every other day with removal of 15 c.c. from the left side. The right side remained dry after the first tap. A left craniotomy was done on the ninth hospital day and the subdural membrane was removed. Four days postoperatively a right subdural tap was done and 15 c.c. of bloody fluid were removed. Two days later a right craniotomy was done and the subdural membranes removed. During the procedure of suturing the skin the infant ceased breathing.

*Case 9.* L. H., an infant two months old, was admitted because of convulsions of one month duration, frequent vomiting and failure to gain weight. The birth weight was six pounds. The labor was thought to be not remarkable. There was no history of trauma.

The temperature was 97.2 degrees rectally. The head circumference was 41.5 cms. The infant appeared not to respond to her surroundings. The extremities were markedly spastic and the tendon reflexes were hyperactive.

Skull x-rays showed a fracture of the right parietal and occipital bones with wide separation of the sutures and fracture lines. The rbc were 2,810,000 and the hemoglobin was 5.9 gms. per cent.

Subdural taps were done and 15 c.c. of bloody fluid with a protein content of 2.4 gms. were removed bilaterally. Daily taps were done thereafter with 15 c.c. fluid being removed. The fluid changed from bloody to xanthochromic after the fifth day. A left craniotomy was done on the 12th hospital day with removal of the subdural membrane. At operation the brain was noted to be depressed two inches from the skull with apparent pressure atrophy. Daily right subdural taps were done with removal of 15 c.c. of xanthochromic fluid. There was considerable improvement postoperatively but she had not returned to normal mental function at dismissal. She was seen three months postoperatively and was markedly spastic and was functioning at about the mental level of a baby six weeks old.

#### References

1. Ingraham, Franc D., and Matson, Donald D., *The J. Ped.* 24:1, 1944.
2. Bucy, Paul C., *Text Book of Pediatrics*, Mitchell Nelson, Edition 5, p. 1314.
3. McKay, R. James, Jr., Morissette, Russell A., Ingraham, Franc D., and Matson, Donald D. *The New Eng. J. Med.* 242:1, 1950. p. 20.

### REPORT OF ANNUAL MEETING

A complete report of the 92nd annual session of the Kansas Medical Society, held May 14-17, 1951, at Topeka, Kansas, will be published in the June issue of the *Journal*. Members of the Society who were unable to attend the meeting are urged to read the official proceedings in the June issue.



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## BLUE SHIELD

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### Blue Cross-Blue Shield Changes Due August 1

Final decision on changes in both Blue Cross and Blue Shield benefits as well as increases in Blue Cross and Blue Shield dues will be made at the annual meetings of both boards during May.

It is most important that physicians understand the reasons underlying the increased dues so that such an understanding might be passed along to patients who inquire of physicians as to the changes. The use of Blue Cross in Kansas during 1950 was the highest on record. Total hospital charges in this state have risen from \$73.32 per case in 1948 to \$91.43 during the last quarter of 1950—an increase of 24.6 per cent in three years. Incidence, which is the number of Blue Cross members using the services, has risen from 14.2 cases per 100 Blue Cross members in 1948 to 16.2 cases per 100 members in 1950—an addition of 8,000 cases per year. In addition there has been an increase in the number of admissions per 1,000 members from 142 per 1,000 in 1948 to 162 per 1,000 in 1950. The present Blue Cross dues were based on the average cost of hospital care and the rate of admission during 1948. Therefore, the present rates will have held for a period of two years and eight months before a change is made. This is in spite of the rising costs and the increase in the number of admissions.

The present Blue Shield financial position is excellent. Therefore, it would not be necessary to increase Blue Shield dues to sustain the present benefits. However, certain adjustments in Blue Shield services are under consideration which may call for a slight increase in Blue Shield dues. In other words, if Blue Shield improves its services and offers more benefits to the members the dues will be increased to provide these new services. There is some consideration being given to increasing the allowances for medical (non-surgical) care in the hospital to bring the Blue Shield payment for this service closer into line with surgical payments. Also being considered is a possible increase in the accident x-ray provision as well as in certain payments for major surgery and anesthesia.

Plans are being made to provide full information to Blue Cross and Blue Shield members through direct mailing in order that these changes may be understood. However, if the members can find support for such changes by their physicians it will be of tremendous help in retaining members and building enrollment in the future. These simple statements can be made:

1. Hospital costs are going up just as everything else is.
2. People today need Blue Cross and Blue Shield protection more than ever before.
3. The Blue Cross and Blue Shield rate increases are necessary to meet the rising costs and to provide members with additional protection when they become sick.

If the proposed changes are finally adopted by the Blue Cross and Blue Shield boards the Kansas plans will be in a position to offer its membership one of the best rounded programs available in the United States for prepaying hospital and medical costs.

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### Forced Feeding Speeds Healing of Burns

The healing of serious burns is accelerated through a system of high caloric feeding now being tested by Army doctors, according to a recent report from Major General R. W. Bliss, Army Surgeon General. Testing of the system, involving a new electric pump and new principles of nutrition, was started recently at Brooke Army Hospital, Fort Sam Houston, Texas.

Many extreme or extensive burns, especially if they have become infected, result in a toxic, depleted state in which the patient loses weight and strength and suffers severe loss of appetite.

Under the Army's treatment program, a liquid diet very rich in energy is fed through a small plastic tube inserted through the nose directly into the stomach. The food is carried to the stomach by means of the pump devised by Dr. Truman G. Blocker, staff surgeon of the University of Texas Medical School.

The liquid flows in at an extremely slow rate, about one-twentieth to one-thirtieth of an ounce per minute, which permits the food to be well assimilated without nausea or vomiting. By running the pump 24 hours a day, it is possible to feed a seriously debilitated patient several thousands of calories daily. As the patient gains weight and strength, his appetite increases to the point where he can eat full normal meals, but the mechanical feeding is continued in order to provide additional thousands of calories until the healing of the burns is well under way.

High caloric feeding is one of several phases of thermal burn research being carried on by the Army. As results are obtained, the findings will be reported to the civilian medical profession since burns will be an important factor in the medical aspects of civil defense planning.

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Good will is the mightiest practical force in the universe.—C. F. Dole.

## PRESIDENT'S PAGE

Dear Doctor:

I wish to convey to each and every member of the Kansas Medical Society my sincere appreciation for the honor and the privilege you have extended me in using this, "Your President's Page." I trust I shall at all times be worthy!

Dr. Croson has made many projections, some of which have been launched as a result of joint and mutual thought; so those requiring two years or more to complete will now become my charge, along with the current problems attending the office. The magnitude of this obligation causes me to approach the coming year with a deep sense of humility.

I am confident your Council, officers, committee chairmen and their respective members feel that we will not be equal to the problems lying immediately ahead, unless each and every member will permit us to have access to his thinking. I personally want to urge each of you to participate! This is your organization; we are only your agents, you are an equal holder of stock. 'Tis for you to direct and 'tis for your selected staff to execute the directives in such manner as to provide a satisfactory balance sheet at the end of the year.

I am so moved by the possibilities that could result in correlating the thinking of each and every member that I would prefer to talk with each of you personally! That being impossible, your written opinions would be of great service to the Society.

Furthermore, permit me to suggest your letter will be a personal directive which embodies the results of your evaluation as to how Medicine ranks in your community, what is being done wrong, and wherein can Medicine help its own cause. Without fail give me your own opinions; especially do I want the critical ones, for by adjusting the critical we become constructive and this is our aim!

I shall eagerly anticipate the immediate future for I hope this appeal will be rewarded by a letter from every single member on or before August 15!

In conclusion, I promise each of you shall and will receive equal consideration. With opinions of majority tabulated, I shall present all received by above date to our fall Council and officer meeting for definitive action.

I trust this democratic attitude will enable us to enjoy together a pleasant and successful year.

Always sincerely yours,

A handwritten signature in cursive script, reading "C. H. Benage". The signature is written in dark ink and is positioned at the bottom right of the page, below the typed name "C. H. Benage".



## EDITORIAL COMMENT

### The Kansas State Board of Health

The 1951 Kansas legislature passed House Bill No. 394 by Mr. Weigand of LaCrosse and Mr. Ferguson of Wellington. This bill discharged the Board of Health consisting of nine physicians and one attorney and authorized the Governor to appoint a new board consisting of ten, of which five shall be physicians, one hospital administrator, one pharmacist, one veterinarian, one dentist, and one sanitary engineer.

The Governor announced the new Board of Health on April 24. The current members are: Mother Mary Ann, Mount St. Mary's Convent, Wichita, term expiring May 1, 1953; Dr. Tom P. Crispell, Parsons, veterinarian, term expiring May 1, 1953; Dr. George M. Coffey, Ulysses, dentist, term expiring May 1, 1954; Mr. Ben L. Williamson, Troy, sanitary engineer, term expiring May 1, 1952; Mr. Wilber Murray, Hutchinson, pharmacist, term expiring May 1, 1954; Dr. Penfield Jones, Lawrence, term expiring May 1, 1954; Dr. Dick McKee, Pittsburg, term expiring May 1, 1952; Dr. Lucius Eckles, Topeka, term expiring May 1, 1952; Dr. Clair O'Donnell, Ellsworth, term expiring May 1, 1954; Dr. Robert C. Polson, Great Bend, term expiring May 1, 1953.

On Thursday, April 5, Dr. F. C. Beelman, director of the Kansas State Board of Health, resigned. The Kansas Medical Society regrets that he found it necessary to resign his position and is of the opinion that it will be very difficult to find a physician who will bring to this office the integrity, the skill, and the cooperative spirit Dr. Beelman has demonstrated during the years he served the profession and the people of Kansas in this capacity.

The Kansas Medical Society will watch the operation of the new board with much interest. It has long been held that directors of the various divisions in a board of health should be qualified representatives of the profession relating to such division. It has seemed logical, however, that the ultimate purpose of a Board of Health, the reason for its existence, is the maintenance of the general health of people. Under that reasoning qualified specialists in many fields other than medicine were employed by the board, but the overall direction was in the hands of the medical profession.

The 1951 Kansas legislature accepted a different view and placed on the board representatives of services only indirectly affecting the health of people. Although this is a departure from the philosophy under which the Board of Health previously operated, it provides opportunity for a new type of health services that might well be progressive. The Kansas Medical Society will gladly parti-

cipate in this experiment and will wholeheartedly cooperate with the new Board of Health toward the end that people of Kansas shall continue to be provided the finest public health services. With the addition of specialists in these five related fields, the board will receive on a top level basis the thinking of specialists in fields other than medicine. The selection of personnel was carefully made with the membership consisting of highly respected individuals in each of the six fields. There will be many serious problems to work out, but with the cooperation of the medical profession the newly constituted board will find its work much easier than would otherwise be possible.

### Indigent Medical Care

The irresponsible statement that fully half of the Kansas expenditure for public welfare goes to the doctors has again created interest in the problem of indigent medical care. It has also been publicly stated that some Kansas physicians receive from \$10,000 to \$15,000 annually for the care of indigent patients alone.

Neither of the above statements could immediately be verified, nor could they be immediately proved to be false. The medical society has begun a serious review of this question and hopes to continue the investigation until complete information is available. It is known, for instance, that medical expenses for indigent persons vary extensively in different sections of the state. There are in operation at least four different types of programs, and financial considerations differ greatly even among societies operating under comparable plans. There is also a variance in the amount of services available to those on relief.

The medical profession has for some time considered the possibility of recommending a more nearly uniform procedure based on an attempt to standardize fee schedules as well as a standardized method of providing services. The immediately obvious differences in professional fees in various parts of the state make the establishment of one universal fee schedule impractical, while local custom creates a variety of problems with reference to the second phase of solution. There is an area, however, within those differences where some type of coordinated effort can be helpful. The Committee on Medical Economics will shortly request each county medical society to evaluate its program for indigent medical care and will welcome suggestions for a state-wide solution.

Numerous ideas have already been received. Among the counties employing the insurance plan, there is at least Shawnee County that sets a fee

schedule for surgery and approves all care prior to payment on the basis of action by a governing board. One county, Sedgwick, staffs a county hospital with society members who donate their services. There are also the very small counties with a low indigent population where this problem is without major significance. In between are many areas where the local medical profession has given much consideration to this matter, and already a few interesting ideas have been expressed.

By way of example, the Cowley County Medical Society is currently studying the legality of a plan to reduce utilization. It is felt that many indigent families take excessive advantage of free medical care to a point at which utilization is far above care of those persons who are not on relief. Cowley County suggests that a charge of 50 cents be collected from the indigent for each of the first two calls on any illness. This would be paid by the family. There is a currently unanswered question on the legality of such procedure, but if it is approved it is felt by the physicians in Cowley County that a reduction would be experienced in the number of unnecessary calls that are currently being made.

Another interesting idea comes from the Nemaha County Medical Society. Here, again, legal questions are unsolved, but in this instance direct action has already been taken and reported in the *Courier-Tribune* of Seneca, Kansas, on Thursday, March 1, 1951. The story made front page news, as well it might. Published in this paper was a resolution the Nemaha County Medical Society sent to the Nemaha County Board of Social Welfare, as follows:

"In the best interest of the taxpayers and persons in need of indigent care, the Nemaha County Medical Society favors eliminating all national regulations, and establishing local management of our county welfare needs; publishing monthly in all papers of the county the names of all clients and the payment to each.

"To add emphasis to the above recommendation, if adopted, the members of the Nemaha County Medical Society offer their services without charge to the patients of the county."

At any rate, those are a few ideas. It is hoped that others may be received so that an improvement in medical care for indigents can be effected which will resolve this problem for the medical profession, the indigent, and for the general public alike.

### Federal Grants to Kansas

The Bureau of Government Research, the University of Kansas, Lawrence, issued a report on federal grants to Kansas for the fiscal year 1950. In the report all grants are broken down to the exact purpose for which they were given, but of interest

here is the relative amount of federal money used for health purposes and for all other programs.

The federal government returned to Kansas in 1950 a total of \$37,547,230. Of that amount, the Board of Social Welfare received \$16,681,645 and the highway commission \$13,430,310. Those were the two largest categories. Other smaller amounts went to approximately 35 different agencies or departments.

Much has been heard in recent years of the federal money received through the Kansas State Board of Health. That criticism has been repeatedly leveled at this state agency, so often in fact that many persons believe that a large part of all federal money in Kansas is used for health service. The discrepancy in this public thinking is clearly shown in the report from Kansas University. The Kansas State Board of Health last year received a total of \$1,982,977. This, recall, is from a total of more than 37½ million, which gives the Kansas State Board of Health less than one-eighteenth of the total federal allotment.

Even that is not a fair figure because of the federal money used by the Kansas State Board of Health \$1,333,437 was Hill-Burton money, merely administered by the Board of Health but going directly for hospital construction. In any valid sense this money was not used for what may be thought of as public health purposes. That leaves, then, the total federal grant to the Kansas State Board of Health for all health programs \$649,540, considerably less than two per cent of the total federal grant to the state.

Selecting at random from the tabulations, a few of the items that are larger than the state-wide disease control programs may be found in the school lunch program receiving more than \$900,000; Kansas State College, \$950,000; the State Board of Education, more than \$1,500,000; the Labor Department \$1,600,000; the Civil Aeronautics Administration, more than \$800,000. It appears, in view of the many criticisms that have been made regarding the use of federal money in Kansas for health purposes, that these figures should be widely disseminated.

### American Medical Association Dues

Because of confusion which exists in the minds of many members of the Kansas Medical Society regarding the payment of dues in the American Medical Association, a summary of several A.M.A. releases on this topic is presented in the *Journal*.

Dues for A.M.A. membership were first levied in 1950, and the amount was set at \$25, the same membership fee required this year. Those who were delinquent in 1950 are not now eligible for membership in the national organization unless last year's dues have been paid in full.



Members who are called to active military duty before July 1 of a given year are liable for one-half the amount of dues for that year, and thereafter while on active duty are excused from the payment of dues. Those called to active duty after July 1, are liable for total annual membership dues for that year. A.M.A. dues, like Kansas Medical Society dues, are payable through the secretaries of the component county medical societies.

One of the principal causes of confusion is the matter of honorary membership. In accordance with provisions of the Constitution and By-Laws of the Kansas Medical Society, a physician who is voted into honorary membership in his constituent county society is excused from payment of state dues, but the same does not hold true on the national society basis. Exemption from payment of dues may be granted only by the Board of Trustees of the A.M.A. and that action is taken only for persons in one of the three following categories: (1) those for whom the payment of dues would constitute a financial hardship as determined by their local medical societies; (2) those in actual training for not more than five years after graduation from medical school; (3) those who have retired from active practice.

Fellowship in the A.M.A. is distinct from membership and requires additional dues of \$5.00, payable to the A.M.A., 535 North Dearborn Street, Chicago 10, Illinois. Fellows are permitted to hold office in the A.M.A., can be elected as delegates to the A.M.A., and can participate in the national scientific assembly.

A.M.A. membership dues include subscription to the Journal of the American Medical Association, but those who are excused from the payment of dues will not receive the J.A.M.A. unless they subscribe at the regular rate of \$15 a year. Fellows may elect to receive one of the special journals published by the A.M.A. instead of the Journal.

Any physician who becomes a member of the A.M.A. on or after July 1 will pay \$12.50 instead of \$25 dues for that year.

In addition to the individual benefits accruing to those who are members of the A.M.A., it is important for physicians to be prompt in the payment of national dues so that Kansas will have full representation at national meetings. The apportionment of delegates to the A.M.A. from the Kansas Medical Society is based on the number of members in the state as recorded in the office of the A.M.A. on December 1 of each year. One delegate is permitted for each thousand members, or fraction thereof.

Kansas physicians who have questions about membership or the payment of dues are invited to write the Executive Office for any information they wish.

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## SOCIALIZED MEDICINE

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*Editor's Note. This is the 18th of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

### The Cost of Health Insurance

This is a review of a 27-page pamphlet entitled "The Cost of Health Insurance" by George Soule. It is prepared under the auspices of the Committee on Research in Medical Economics, Inc., New York. Michael M. Davis, chairman, has made this organization perhaps America's loudest proponent of socialized medicine. The pamphlet, therefore, presents the Ewing viewpoint. It is included in this series to give Kansas physicians an example of the more scholarly arguments favoring compulsory medical care programs. It is, incidentally, also an excellent example of the ultra in the American type of socialistic thinking.

Mr. Soule begins his thesis by saying that the doctors of America will give 25 per cent more medical care under socialized medicine, which he calls health insurance, than they are giving now. Therefore, the nation would get 25 per cent more medical care than at present. The government expects to pay the general practitioner \$13,000 and the specialist \$26,000 annually for their services. Since the number of doctors is known and static, this cost can be reliably estimated. Similar logic is applied to the estimates for all health services. There are so many to provide the service, each will be paid so much, and the resulting figure represents the total cost. The total, then, for the nation for complete health care is approximately five and one-half billions of dollars, or an annual per capita cost of \$37.39.

In the beginning, then, national health insurance will cost the people 20 per cent more than they are paying today. "This cost arises, solely on account of the *additional* services which the insurance might *immediately* provide, because it would enable people to pay who now cannot afford to do so. The people of the country would get, in return, 25 per cent more medical care . . . The precise ratio which this estimate of medical insurance cost bears to the total gross national product (in money terms) is 0.427 per cent (427 thousandths of one per cent).

"When anyone asks whether the nation can afford to pay for health insurance, he is therefore asking whether it can afford to devote to this service less

than half a cent out of every dollar spent. Do the citizens want the new system that much? That is the relevant question."

Mr. Soule estimates that in some 10 years the cost of the program will increase 35 per cent or, in round numbers, two billion dollars. It is expected that the national income by that time will be considerably greater than it is today. The President's Council of Economic Advisers estimates the output per man-hour should increase about 22 per cent in 10 years. An increase of less than one per cent in the national production will provide ample resources for expansion of the program and, since 22 per cent is expected, this cost will scarcely be felt.

"This means that, on the average, the people of the United States can probably have after five years (a) as high a standard of living as they now enjoy, plus (b) more adequate medical service, plus (c) a gain of more than nine per cent in other goods and services. If a 10-year period is taken to develop the higher standard of medical service, the average person can have, at the end of the decade, that service plus a gain in other necessities and satisfactions of more than 21 per cent. Do the people of the country wish to earmark that much of their future increase in income for the additional medical care? If so, they can afford it."

Mr. Soule next talks about health insurance in bad times. First, he says, the plan is financed by taxes, most of which will be spent each year. It will therefore have no important effect on the swing of business. "Families in the lower income brackets usually spend all they receive; there are no net savings in these brackets, if we balance the deficits of those who spend more than they earn against the savings of those who spend less than they earn. All the net savings come from the higher income brackets. In time of depression, therefore, when incomes are falling, those with the higher incomes are likely to save less and spend a larger part of their incomes as they drop into the lower brackets. They would be all the more likely to do so if protected by health insurance, since then they would not have to provide against the misfortune of illness.

"Thus the effect of national health insurance is likely to emphasize larger spending and smaller saving during depressions. It is at this very time that larger spending and smaller saving are desirable to bolster up employment.

"The greater part of the cost of medical insurance will, under the pending bill, be met out of the payroll tax. When a business recession sets in, employment decreases, wages and salaries have a downward tendency. Since payrolls become smaller during a recession, the yield of the payroll tax will be less. This will probably not occasion any great difficulty

in a moderate or brief recession, for two reasons. Prices go down as well as incomes, and there will be some fall in the cost of medical service, so that the expense to be met by the insurance fund will decrease as its receipts fall. Insofar as this did not occur, the working capital of the insurance fund would probably be sufficient to bridge the gap.

"But in a severe or long-continued depression, with a large volume of unemployment, the payroll taxes would probably shrink considerably more than the medical expenses which had to be paid. There would be a deficit in the insurance fund, which would have to be met by enlarging the federal appropriation out of general funds.

"At times when the federal budget is unbalanced, as it is during depression, the payment from the government would in part be financed by borrowing. Thus it would fit with any governmental aim to combat depression by a compensatory fiscal policy. When the government spends money which does not come out of the current income of the public, and so does not reduce the spending of the public, the total of demand is enlarged and employment is stimulated. This would be as true of money spent for medical care as of any other type of expenditure.

"Insofar as the government appropriation to medical insurance increased employment during a depression, the insurance would be costless in real terms. That is, its cost would be counterbalanced by the increase in employment, production and income to which the appropriation gave rise."

### Over-all Picture of P.H.S. Grants

A summary of Public Health Service grants to states and territories for 1951, issued recently by the Federal Security Agency, shows that a total of \$114,206,100 has been allocated for public health services, studies of water pollution caused by industrial wastes, and hospital construction.

States with smaller economic resources receive larger grants per capita than the wealthier states. Allotments are set aside for all states at the first of the fiscal year on the basis of the sums appropriated by Congress. Payments are subsequently made to those states with approved plans for use of grant funds, on the basis of the state's request for payment.

The sums allotted by the Public Health Service for eight programs of health assistance to states are as follows: general health, including assistance for local health services, \$13,540,500; tuberculosis control, \$6,350,000; venereal disease control, \$10,390,600; cancer control, \$3,200,000; mental health, \$3,200,000; heart disease control, \$1,700,000; hospital construction, \$75,000,000; industrial waste studies, \$825,000.



## Case Reports from the University of Kansas Medical Center Tumor Conference\*

Edited by R. E. Stowell, M.D., and D. M. Gibson, M.D.

### Carcinoma of the Cervix

The mortality from cancer of the cervix, which is the second most frequent neoplasm among women, should be more vulnerable to attack by existing methods of early diagnosis and adequate treatment than most other types of cancer. These two cases illustrate some of the problems frequently encountered in cervical cancer.

#### Case No. 51-9

M.M., a 41-year-old married colored woman, visited the Out-Patient Clinic January 3, 1951, complaining of a vaginal discharge of one year's duration. It was described as milk colored, non-irritative, moderately malodorous, and not requiring a pad. There had been no increase in discharge during the past year. Menstrual periods had remained normal with no inter-menstrual or post-coital bleeding. The patient was grava X and para V.

General physical examination was negative. Pelvic examination revealed a hypertrophied and firm posterior cervical lip and several easily bleeding areas over the surface of the cervix. No parametrial induration was noted. The remainder of the pelvic examination was negative. Cervical biopsies were reported as atypical epithelial hyperplasia. A roentgenogram of the chest was negative and laboratory studies were normal. The hemoglobin was 65 per cent.

The patient was admitted to the University of Kansas Medical Center January 11 and on January 15, 1951, a scalpel conization of the cervix was done. The pathological report was anaplastic squamous cell carcinoma of the cervix. Radium, 4,500 mgm. hours, was applied to the cervix in the Swanberg applicator and the patient was started on roentgen therapy.

#### Case No. 51-8

M. R., a 55-year-old white woman, was admitted to the University of Kansas Medical Center January 15, 1951, with complaint of vaginal hemorrhage following a vaginal examination. She had a subtotal hysterectomy, salpingectomy and unilateral oophorectomy at 19 years of age because of tubal pregnancy and abortion. No vaginal bleeding occurred prior to the vaginal examination a few days preceding admission. This bleeding required packing the vagina. In August, 1950, she noted a thick white vaginal discharge, which persisted, and in December, 1950, there was a gradual onset of

pressure in the lower abdomen, accompanied by constipation. She had one full term normal delivery at 18 years and a tubal pregnancy at 19 years. She had lost 10 pounds weight in the past month.

The general physical examination was essentially negative. Pelvic examination revealed extensive carcinoma filling the pelvis anteriorly but not involving the bladder.

On admission, the hemoglobin was 45 per cent with 2,520,000 red blood cells, 10,650 white blood cells and a normal differential count. The sedimentation rate (Cutler Method) was 36 mm. in 60 minutes. The remainder of the laboratory studies were negative, except for the non-protein nitrogen, which was 56.5 mgm/100 cc.

The day of admission 500 cc. of whole blood was given. The evening of admission she began bleeding vaginally and required vaginal packing. Biopsies of the pelvic mass were reported as anaplastic squamous cell carcinoma of the cervix. Following two more transfusions, the hemoglobin was 50 per cent and the patient had little bleeding after removing the vaginal pack. She was started on roentgen therapy.

#### Discussion of Cases

Dr. Helwig: The biopsy on the first case was not entirely satisfactory and more tissue was requested. A conization of the cervix was diagnosed as Grade I carcinoma in only two minute foci. The lesion in the second case was much more extensive but somewhat less anaplastic. Nests of anaplastic squamous cells have invaded and almost replaced the cervical stump tissue. This is a Grade III carcinoma.

Dr. Calkins: These two patients illustrate several of the problems involved in caring for carcinoma of the cervix. The first problem is that of diagnosis; occasionally the microscopist has difficulty in arriving at an exact diagnosis, as in the first case. The second patient, of course, offered no difficulty in diagnosis. In carcinoma in situ the problem of whether there is really invasion or not is an important one and must be settled. One cannot afford to delay instituting therapy in cervical carcinoma, because the rate of growth may be rapid. It is estimated that 45 per cent of all cervical carcinomas have metastasized by the time they are first seen.

The next problem is that of the late onset of symptoms in these cervical carcinomas. This is well shown in the second patient; she did not have a single pelvic symptom until a few days before she

\* Cancer teaching activities aided by a grant from the National Cancer Institute.

was admitted to this hospital, and yet her pelvis was filled with carcinoma. She had had no bleeding whatever until it was induced by pelvic examination. She sought medical advice because of anemia and weakness. On closer questioning, she admitted that she had had a little watery discharge, but it had been so slight that she had paid no attention to it. What is the answer to that problem? The answer can only be periodic examination. Obviously this tumor had been present for at least a year and a half or maybe two or even three years, and yet the patient had no symptoms.

Another problem that we are confronted with in these patients is the delay in getting the patient to treatment after the symptoms have appeared, and even after the diagnosis has been made. Twenty years ago, the average delay encountered was 15 months. It's almost impossible to believe that the average delay today is six months. One might understand this if the delay is attributable to the patient, because of ignorance or a belief that it's hopeless to treat carcinoma; but we find that the delay is the fault of the physician in two-thirds of the cases. The patients come for treatment as soon as they are told. The medical profession has improved; they have decreased the time from 15 months to six months; but further improvement is definitely necessary.

The next problem involved has to do with the treatment of these patients. You will notice that the two patients are being approached differently as far as treatment is concerned. The first one had radium inserted immediately; the second one is being treated with x-ray.

At least nine out of every 10 patients will get much better results by treatment first with x-ray, and then, at the end of the x-ray treatment, with radium. The reason for this is that all carcinomas of the cervix of any magnitude are infected. These patients must be given x-ray first because x-ray does not traumatize the tissues so much; it is less likely to stir up the infection. Infection is apt to be spread by the introduction of radium. It's not at all unusual to get a severe pelvic cellulitis if one puts in radium too soon. In some of the early tumors, one can put the radium in first with relative safety. It is convenient to put the radium in at the time the biopsy is taken and the conization is done, if you know it is a carcinoma, but that must not be done if you are dealing with a large tumor. It's not always safe even with a small one.

Dr. Helwig: We don't have so much fear of using radium today because of the antibiotics. It is true that sometimes in fungating lesions you can't find the hole to put the radium in. These cases respond well to initial external irradiation; the tumor will shrink down, the external os will be exposed

and then one can insert radium.

Dr. Calkins: The prognosis in these two patients is almost diametrically different. The cure rate on the first patient should be at least 70 per cent. Schmitz<sup>1</sup> has reported as high as 90 per cent salvation in early Stage I carcinomas. The cure rate in the second patient is much less satisfactory; it is, at best, about 10 per cent.

Dr. Stowell: Dr. Delp, will you comment on the positive Wassermann reaction that sometimes occurs in carcinoma of the cervix?

Dr. Delp: The positive Wassermann, that we ordinarily recognize as evidence of syphilis, is not a specific reaction. It is not really a measurement of the antibodies created by the spirochetes; and it is known that the Wassermann is falsely positive in a good many instances, such as in malaria, hepatitis, and various other diseases, particularly carcinoma of the cervix. We have no explanation except that we are dealing with a non-specific type of phenomenon.

Dr. Calkins: Might it be that some of these infectious organisms or viruses in some way assist in the production of the positive Wassermann reaction?

Dr. Delp: That is difficult to prove. The infecting organisms might have something to do with it. Various virus diseases are frequently associated with false positive Wassermann reactions.

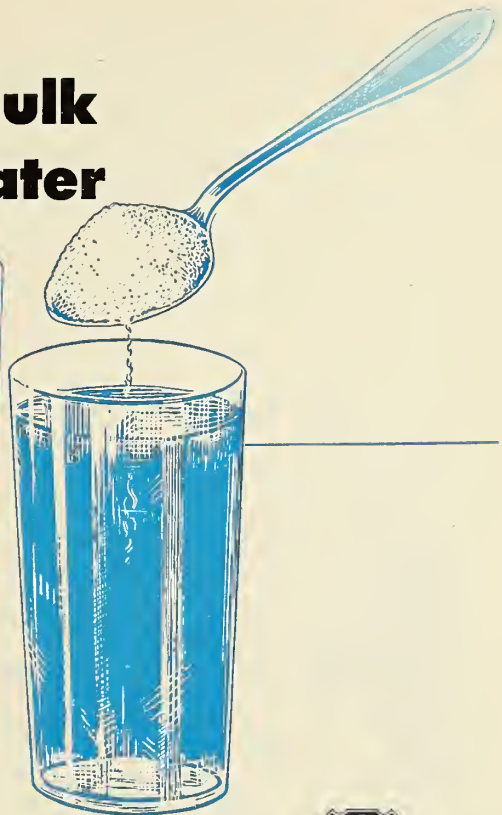
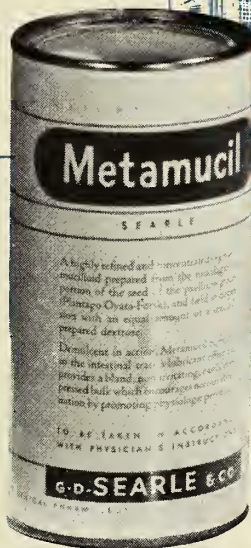
Dr. Stowell: When diagnosed and treated early, the patient has a much better chance of a satisfactory result with this type of cancer than in many other types. Dr. Goodman, would you discuss the importance of the early diagnosis of cervical cancer.

Dr. Goodman: Every doctor who comes in contact with a female patient has the responsibility of doing a pelvic examination. The delivery of obstetrical patients and their post-partum follow-up gives an excellent opportunity for the clinician to keep the patients under surveillance. Vaginal smear examinations are difficult to interpret, but many people are trained to detect whether or not the smears contain malignant cells. There are modifications of this method, such as the use of gelfoam. Nothing is as accurate as a knife dissection or conization of the cervix. The spot biopsy, the biopsy taken regularly in a suspicious area, or in which the cervix has been sprayed with Lugol's iodine, is also helpful but is not as accurate a method as knife conization. The appearance of early carcinoma is not definite and the microscopic appearance is often confusing; this means that patients must be watched carefully and repeated biopsies should be taken. One cannot depend on any living tissue remaining static; it may undergo malignant change in a very short time.

Dr. Stowell: What proportion of the women in the Kansas City area do you think are having satisfactory periodic examinations?



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Dr. Calkins: The percentage in Kansas City, or almost anywhere else, is very, very small. I don't have any way of knowing whether as many as one per cent of the women have periodic examinations or not. The medical profession, on the whole, has been reluctant to give periodic examinations, for fear that the public would think they were looking for business. At the Woman's Medical College in Philadelphia, they are examining many thousands of women every year and have found approximately three carcinomas per 1,000 women examined.<sup>2,3</sup> That makes the procedure, whether paid for by the individual or by public funds, an expensive one. Many physicians wouldn't want to be bothered with visits of that sort because they wouldn't create much income, and they would take too much time. I must confess that I don't have the answer to it.

Dr. Stowell: Most of our physicians are trained for and are more interested in treating acute and chronic illnesses rather than in the examination of the well patient for the prevention of illness. In future years our viewpoint may change somewhat in this respect. Dr. Critchfield, will you comment on the problem of total hysterectomy as opposed to supracervical hysterectomy.

Dr. Critchfield: Carcinoma of the cervical stump is seen quite frequently. We see it sometimes because the cervix itself has never been examined before the corpus of the uterus has been removed. If a woman is going to undergo pelvic surgery, she certainly warrants a thorough examination.

The opinion that total rather than supracervical hysterectomy should always be done is almost universally accepted now. There are, of course, those cases in which supracervical hysterectomy is indicated. A total hysterectomy requires more operating time and more skill, and there are those patients whose lives would be definitely in danger if a total hysterectomy were done. With those few exceptions, perhaps this problem could be solved by total hysterectomy rather than the supracervical type.

Student: I should like to ask about the comparative morbidity after a supracervical and a total hysterectomy, and the difficulty of getting a good pelvic suspension after a total hysterectomy.

Dr. Calkins: The idea that one cannot preserve the properly functioning vagina after total hysterectomy and that, therefore, one should leave a cervical stump so that he can suspend the stump and leave a long vagina for marital relations has been the chief deterrent of the necessary change from supracervical to complete hysterectomy. One can do a total hysterectomy and leave a longer vagina than with a supracervical hysterectomy. As pointed out by Counsellor,<sup>4,5</sup> the end of the vagina can be suspended even better than the cervix. There are only a few instances in which it is inadvisable to do a

complete hysterectomy; the most common one is massive endometriosis involving the entire pelvis. The dissection involved in some such cases to remove the cervix is not justified.

Dr. Helwig: In one series of 380 carcinomas of the cervix 62 were stump cancers. Forty per cent of those women who developed stump cancer had cancer when they had the supravaginal hysterectomy.<sup>6</sup> In another series of 581 cases of stump cancers, 23.5 per cent were known to have cancer of the stump at the time of operation.<sup>7</sup> I feel that any surgeon who is not skillful enough to do a total hysterectomy should not do a supravaginal hysterectomy. We have improved all of our operating techniques and with all the antibiotics and other adjuncts that are now available, I can see no excuse for doing a subtotal hysterectomy except in rare instances. In well established cancer of the cervix the growth rate decreases the chances of cure in a given patient an average of three per cent per week; for this reason, cancer of the cervix is truly an emergency operation.

In my opinion, the second patient didn't need the hysterectomy. She had an ectopic pregnancy and they did a hysterectomy. If they had done the right operation, she would never have had cancer of the cervix; but if they had left her fundus, the chances are she would have had some menstrual irregularity or something in the way of symptoms before the stump cancer gave her symptoms. There was a period of five months when she had a little milky discharge, but that was not enough to alarm her; if she had had her intact uterus she might have had some symptoms a little earlier.

Dr. Stowell: Dr. Helwig, will you comment further on the matter of carcinoma in situ.

Dr. Helwig: I think there is "in situ cancer," and I think it is reversible. In the last year I have seen two cases that had positive biopsies and positive Papanicolaou stains for a period of nine months. We didn't conize their cervixes, even though we should have. Repeated biopsies since that time and repeated Papanicolaou smears have been negative. The conization specimen obtained later from one of them was negative.

We see leukoplakia of the lip that will involute spontaneously; we see precancerous dermatoses that undergo spontaneous regression, and I think that the mucous membrane of the portio cervix resembles other similar tissues in this respect. By the use of the Papanicolaou stain I believe we can diagnose many in situ carcinomas that one can't see, can't feel, and that have no clinical or visual manifestations. However, I am doubtful about doing a total hysterectomy and taking out both the ovaries of a young woman unless she has a real invasive neoplasm.



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## Supreme Court Decision

A decision of the Kansas Supreme Court rendered in March, 1951, is of considerable interest to the medical profession. The county attorney of Finney County, Kansas, and the attorney for the Kansas State Board of Medical Registration and Examination filed a case in the Finney district court asking an injunction against V. A. Leopold, D.O., of Garden City for violating restrictions contained in the medical practice act of Kansas. The defendant held the position that the attorney for the medical board had no right to file such a case. This question was reviewed by the Kansas Supreme Court, and the court upheld the right of the attorney for the medical board to enter cases of legal action against violators of the medical practice act.

The following is quoted from the decision:

The opinion of the court was delivered by

SMITH, J.: This is an action in the name of the state of Kansas on the relation of the county attorney of Finney county and on the relation of the state board of medical registration and examination to enjoin the defendant from what is designated in the petition as the unlawful practice of medicine. The court below overruled the defendant's demurrer. He has appealed.

The petition stated the official capacity of the county attorney and the state board of medical registration and examination and then stated that defendant, a doctor of osteopathy, was without any right to engage in the practice of medicine but notwithstanding that was usurping that right, and was holding himself out to the public to be lawfully engaged in such practice and had on numerous occasions recommended and for a fee, prescribed drugs and medicine. Instances where defendant had performed acts of surgery were pleaded. The prayer was that defendant be ousted from practicing medicine and surgery in the state of Kansas.

The defendant demurred to the petition on the ground that the state of Kansas and the state board of medical registration and examination of Kansas were improper parties plaintiff; that the state of Kansas, ex rel, and the state board of medical regis-

tration and examination had no legal capacity to jointly prosecute the action; that neither one of the two attorneys who had signed the petition as attorneys for the state board of medical registration and examination had any legal capacity or authority to prosecute the action; that plaintiffs being without such legal capacity, the court had no jurisdiction of the subject of the action and plaintiffs being without legal authority the court had no jurisdiction of the person of the defendant.

This demurrer was amended later, adding thereto the ground that the state board and the state on the relation of the county attorney are not the real parties in interest. This demurrer was overruled and the defendant has appealed.

It will be noted the action is entitled:

"State of Kansas ex rel Dale H. Corley, as County Attorney of and for Finney County, Kansas, and The State Board of Medical Registration and Examination, of Kansas."

The introductory paragraph reads as follows:

"Comes now the State of Kansas, on the relation of Dale H. Corley, as County Attorney of and for Finney County, Kansas, and on the relation of The State Board of Medical Registration and Examination, of Kansas, and for cause of action against the defendant above named, alleges and states;"

The defendant states the questions involved as follows:

"1. Has the State Board of Medical Registration and Examination legal capacity to institute and maintain, in its own name, an action in injunction under and pursuant to 65-1010, 1947 Supp., G. S. 1935?

"2. Are the State of Kansas on relation of the County Attorney joined with the State Board of Medical Registration and Examination, as plaintiffs, the real parties in interest?

"3. Has the State of Kansas, on relation of the County Attorney, joined with the State Board of Medical Registration and Examination, legal capacity or authority to institute and maintain an action in injunction under such statute?"

The statute referred to in the first question is now G. S. 1949, 65-1010. That is a portion of the chapter providing for the examination and registration of doctors. It reads as follows:

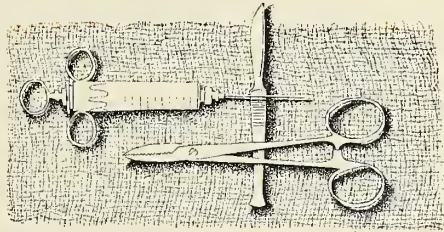
"An action in injunction or quo warranto may be brought and maintained in the name of the state of Kansas to enjoin or oust from the lawful practice of medicine and surgery any person who shall practice medicine and surgery as defined by the law of Kansas without being duly licensed therefor. Nothing herein contained shall confer upon the probate judges or district courts of the state the right to grant temporary restraining orders or temporary



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injunctions under this act, and no injunction matter shall be heard or decided until the defendant shall have had his day in court."

Attention is also called to G. S. 1949, 65-1006. That is part of the same chapter. The last sentence of the section reads:

"It shall be the duty of the secretary of the state board of registration and examination to see that this act is enforced."

Appellant argues that the foregoing statute did not confer on the state board of medical registration and examination authority to bring actions on the relation of that board. In connection with this argument he cites G. S. 19-702, an act which defines the duty of the county attorneys and G. S. 1949, 75-702, which defines the duty of the attorney general. Each of these sections makes it the duty of the officer mentioned to appear and prosecute in the name of the state on behalf of the people. For the sake of the decision in this case it may be conceded that such is the law. We are not confronted with an action brought in the name of the state of Kansas on the relation of the board of medical registration and examination. As pointed out, this action is brought in the name of the state of Kansas on the relation of the state board of medical registration and examination. There can be no doubt but that the county attorney has authority to bring such an action. (See *The State, ex rel. v. Allen*, 5 Kan. 213; *The State, ex rel. v. Majors*, 16 Kan. 440; *The State, ex rel. v. Kelly*, 2 Kan. App. 178, 43 Pac. 299; *The State, ex rel. v. Baird*, 117 Kan. 549, 231 Pac. 1021; *State, ex rel. v. Bradbury*, 123 Kan. 495, 256 Pac. 149; and *State, ex rel. v. Wyandotte County Comm'rs*, 140 Kan. 744, 39 P. 2d 286.)

The defendant argues that the state of Kansas on the relation of the county attorney joined with the state board of medical registration and examination are not the real parties in interest. Some opinions are cited holding that in an action where a party who has no interest in the litigation is joined with the party who does have an interest, the action is subject to dismissal. We have examined these authorities and find they are not in point here. The most that may be said for the argument of defendant is that the joining of the state board of medical registration and examination was surplusage.

The defendant argues that the action was not brought by the state, ex rel., county attorney for the purpose of protecting the health of the people, but was actually brought to protect the professional interests of the members of the medical profession.

The enactment of chapter 270 of the Laws of 1937, now G. S. 1949, 65-1010 and 65-1011, together with *State, ex rel., v. Cooper*, 147 Kan. 710, 78 p. 2d 884; *State, ex rel., v. Gleason*, 148 Kan. 1, 79 P. 2d 911; and *State, ex rel., v. Moore*, 154 Kan.

193, 117, P. 2d 598, are a refutation of this argument.

The judgment of the trial court is affirmed.

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## ACTIVITIES OF MEMBERS

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Dr. Robert G. Smith of the Santa Fe Hospital, Topeka, was speaker at a recent meeting of the Potter County Medical Society at Amarillo, Texas. His subject was "Medical Care for Railway Employees."

\* \* \*

Dr. D. L. Richardson, formerly of Okeene, Oklahoma, has opened an office in Minneola. A community reception was held on March 8 with Dr. Franklin D. Murphy, Kansas City, as speaker.

\* \* \*

Dr. V. E. Watts, Smith Center, became county health officer on March 1.

\* \* \*

Dr. Philip Clark, Hays, was principal speaker at the dedication of the new Rush County Memorial Hospital at La Crosse, March 4.

\* \* \*

Among speakers at a regional meeting of the American College of Physicians held at Wichita on March 16 were: Dr. William C. Menninger, Topeka; Dr. Thomas J. Rankin and Dr. Bert E. Stofer, Wichita; Dr. Robert E. Bolinger, Kansas City; Dr. G. W. Hammel, El Dorado; Dr. E. Gray Dimond, Kansas City; Dr. Robert J. Kinney, Topeka.

\* \* \*

Dr. E. J. Ryan, Emporia, spoke on "Glands and Glandular Diseases" at a lay meeting at Cottonwood Falls recently.

\* \* \*

Dr. J. R. Shumway, Pleasanton, was guest of honor at a community party on March 8 in recognition of his 50 years in the practice of medicine. He has practiced in Pleasanton since 1918, and before that practiced in Greenleaf and Home City.

\* \* \*

Dr. C. W. Haines, Haven, announces that Dr. Lee Schloessner, a graduate of the University of Kansas School of Medicine, will be associated with him in practice for a few months. Dr. and Mrs. Haines are now touring Europe and will return in May.

\* \* \*

Dr. Calvin Wartman, formerly of Hardtner, is now practicing in Ulysses in association with Dr. M. A. Brewer.

\* \* \*

Dr. Gordon H. Rhoades of the Halstead Clinic reported for active duty with the Army on March

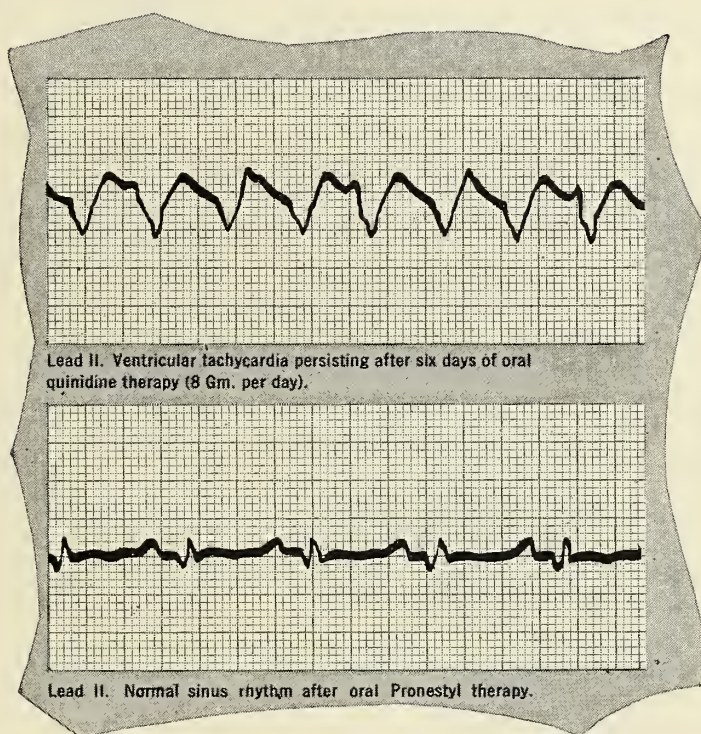


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10 and was sent to Carswell Air Force Base, Fort Worth, Texas. He holds the rank of major.

\* \* \*

Dr. John A. Billingsley, Kansas City, was recently named president of the K.U. Alumni Association unit of Phi Beta Pi, medical fraternity, for the area including Kansas, Missouri and Oklahoma. Dr. A. R. Chambers, Iola, was named vice president and Dr. C. L. Francisco, Kansas City, was chosen secretary-treasurer.

\* \* \*

Dr. Otis H. True, Hays, announces that Dr. Jack T. Miller of Lexington, Missouri, is now associated with him in practice. Dr. Miller is a graduate of Northwestern University School of Medicine.

\* \* \*

Dr. Leo D. Robinson, who has been associated in practice with Dr. Frank Lenski, Iola, has opened an office for private practice in that city.

\* \* \*

Dr. A. G. Dietrich, who has been practicing in Horton since 1947, moved to Newton early in April to practice surgery in the Bethel Clinic.

\* \* \*

Dr. David J. Lyons, Pittsburg, discussed socialized medicine at a district meeting of the Knights of Columbus held at Pittsburg recently.

\* \* \*

Dr. Clyde O. Merideth, Jr., Emporia, was recently given the Silver Beaver Award by the Jayhawk Council of the Boy Scouts of America in appreciation of his service to boyhood.

\* \* \*

Dr. Thomas L. Hill, Arkansas City, addressed the Kiwanis Club in that city recently on the subject of new developments in medicine.

\* \* \*

Dr. Karl Ehrlich, who has been practicing in El Dorado for several years, reported at Carswell Air Force Base, Fort Worth, Texas, on March 12 for active duty with the Army.

\* \* \*

Dr. Doris A. Kubin, Kansas City, addressed the Business and Professional Women's Club there recently, speaking on the subject of radiology.

\* \* \*

A feature story was run in the Salina Journal in March paying tribute to Dr. L. M. Hinshaw, Bennington, who has been practicing in that community since 1905.

\* \* \*

Dr. Robert W. Myers, Newton, and Dr. George Westfall, Jr., Halstead, now serving with the Army, are stationed in Japan at the 343rd General Hospital.

\* \* \*

Dr. Herbert R. Schmidt, Newton, who recently returned from a trip to India, spoke on "Political

Situations in India," before a recent meeting of the Wichita Kiwanis Club.

\* \* \*

A talk on proper care of the eyes was presented to the Independence Rotary Club last month by Dr. Kenneth J. Gleason, a member of the club.

\* \* \*

A feature story about Dr. O. D. Walker, Salina, was published in the February issue of the University of Kansas Alumni Magazine. Dr. L. S. Nelson, Sr., also of Salina, wrote the article and mentioned a number of Dr. Walker's medical achievements.

\* \* \*

Dr. Victor Hildyard and Dr. David G. Laury announce the opening of a new \$60,000 clinic in Baldwin. Completion of the building was recognized with an open house on April 1.

\* \* \*

Dr. Charles Rombold, Wichita, is the author of a paper, "Intervertebral Disc Syndrome," published in the April issue of GP, official publication of the American Academy of General Practice.

\* \* \*

Dr. T. L. Foster, Halstead, spoke recently at a meeting of nurses from Southeast Kansas at Parsons and at a meeting of the Halstead Parent-Teachers Association.

\* \* \*

Dr. Lester Bowles, Clifton, announces that Dr. A. C. Mitchell will be associated with him in practice after June 30 and the two will serve the Clifton and Clyde communities. Dr. Mitchell is now completing study in St. Louis.

\* \* \*

Dr. Vorha Haffner, Ottawa, is conducting a first aid class in that city and Dr. R. S. Roberts is teaching a class in Rantoul.

\* \* \*

Dr. Murray Bowen, Topeka, was one of the speakers at a recent meeting of the Kansas Home Economics Association held in Kansas City.

\* \* \*

Dr. Larry Calkins, who recently opened an office in Kansas City, was called to active duty with the air force recently and is now serving as a flight surgeon in Wichita Falls, Texas.

\* \* \*

The Gelvin-Haughey Clinic in Concordia announces that Dr. George F. Conner is now radiologist on the staff. Dr. Conner moved to Kansas from Northampton, Massachusetts, where he had been radiologist at a veterans' hospital.

\* \* \*

Dr. Mayro O. Hedge, Kansas City, was recently named county physician for Wyandotte County, succeeding Dr. James Pretz, who was called to military service. Dr. L. J. Hanis, Kansas City, was named assistant county physician.



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T for Taste. See if you don't change to  
Camels for keeps.

Dr. H. O. Bullock, Independence, has resigned as health officer for Montgomery County.

\* \* \*

Dr. J. A. Mahre has announced that he will discontinue practice in Victoria because of poor health.

\* \* \*

Townpeople of Harveyville are arranging a community celebration on May 27 to honor Dr. and Mrs. C. L. Youngman on their 50th wedding anniversary. The occasion will also mark Dr. Youngman's 50th anniversary in the practice of medicine there.

\* \* \*

Dr. Gilbert Little, Wichita, addressed a public meeting in Marion April 10.

\* \* \*

Dr. Paul C. Laybourne, of the University of Kansas Medical Center, gave an illustrated talk on the emotional needs of childhood at a meeting of the Lenexa P.T.A. recently.

\* \* \*

Dr. G. B. Sekavec, Oakley, has been named health officer of Logan County.

\* \* \*

Members of the State Board of Medical Registration and Examination recently reappointed by Governor Edward F. Arn are: Dr. J. D. Colt, Jr., Manhattan; Dr. Murray C. Eddy, Hays; Dr. O. W. Davidson, Kansas City; Dr. Noble E. Melencamp, Dodge City; Dr. Lyle F. Schmaus, Iola.

\* \* \*

Dr. F. A. Moorhead, Neodesha, discussed the practice of medicine before high school students in that city recently as part of a vocational program.

\* \* \*

Dr. L. B. Mellott, Bonner Springs, has accepted a position as physician for the Hercules Powder Company at Sunflower. His office in Bonner Springs will be open only on Saturdays in the future.

\* \* \*

Dr. Lucille Stephenson, St. Francis, was speaker at a recent P.T.A. meeting there, telling the results of a recent survey of the condition of school children's eyes.

\* \* \*

Dr. Dean Chaffee, Abilene, has been named director of public health for the Dickinson County civil defense organization.

\* \* \*

Dr. W. J. Feehan, Kansas City, is the newly elected president of the Rotary Club in that city. He will assume his duties July 1.

\* \* \*

Dr. W. A. Carr was named to the commission in Junction City at the April election.

\* \* \*

Dr. R. M. Knox has discontinued practice in

Wamego and has begun a surgical residency at Iowa Methodist Hospital, Des Moines.

\* \* \*

Dr. H. H. Dunham, Kansas City, spoke on the anatomy of the skull at a recent refresher course for the Kansas Society of X-ray Technicians held in Lawrence.

\* \* \*

Dr. F. A. Thorpe was re-elected to the board of education in Pratt at the April election.

\* \* \*

Dr. B. V. Thompson, formerly of Wellington, has opened an office for practice in Fort Worth, Texas.

\* \* \*

Dr. Leo F. Wallace, Glasco, spent last month in Chicago taking a course at the Cook County Graduate School of Medicine.

\* \* \*

Dr. George M. Gray, Dr. C. C. Nesselrode and Dr. O. W. Davidson, Kansas City, have been named trustees of a student loan fund at St. Margaret's Hospital, Kansas City, in memory of the late Dr. J. F. Hassig.

\* \* \*

Dr. J. C. Robb, Fowler, observed his 50th anniversary in the practice of medicine on April 9. He has practiced in Fowler for more than 40 years.

\* \* \*

Dr. H. H. Avery, who has been practicing in Sunflower, has discontinued his practice and has returned to his former home in Omaha, Nebraska. Dr. B. L. Crouch, of the Watkins Memorial Hospital, Lawrence, will maintain evening office hours in Sunflower.

\* \* \*

Dr. I. R. Burket, Ashland, spoke on socialized medicine before the Business and Professional Women's Club there at their April meeting.

\* \* \*

Dr. Rosemary Schrepfer has returned from study at Duke Hospital, Raleigh, North Carolina, and during the coming year will be a senior resident at the University of Kansas Hospitals, Kansas City.

\* \* \*

Dr. W. E. Michener, Topeka, was honored by Capitol Post No. 1 of the American Legion at its April meeting for 30 years of membership and service.

\* \* \*

Dr. C. N. Nash, Wichita, was speaker at the April meeting of the Sedgwick County Medical Assistants Society. His subject was "The Truth May Be Important to You."

\* \* \*

Dr. L. D. Johnson, Chanute, celebrated his 52nd year in the practice of medicine and surgery in



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#### From The Literature

- Bubert and Cook, Bulletin of School of Medicine, Univ. of Maryland, Vol. 32, pp. 175-190, 1948.
- Paul and Montgomery, J. Iowa State Med. Soc., June, 1948.
- Krantz, Holbert, Iwamoto and Carr, J.A.Ph.A., Vol. 36, pp. 248-250, 1947.
- New and Non-official Remedies, 1950, p. 285.



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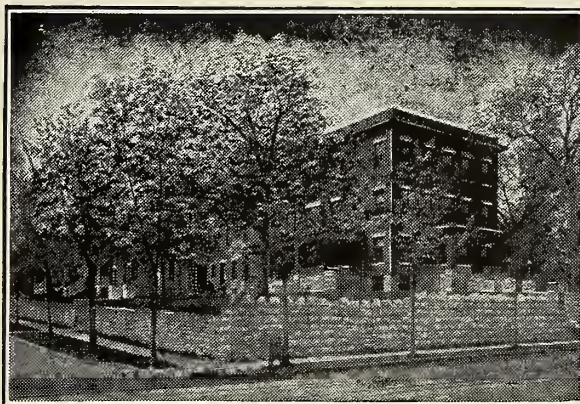
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April. He has practiced in Chanute for 48 years and estimates he has performed 20,000 operations during that time.

\* \* \*

Dr. V. D. Schwartz, Wichita, was speaker at a banquet for alumnae and senior students at St. Francis Hospital, Wichita, in April. His subject was, "The Nurse in Civil Defense."

\* \* \*

Among Kansas physicians who gave talks at recent meetings sponsored by the American Cancer Society were the following: Dr. Mary Glassen, Phillipsburg, speaking at Goodland; Dr. Larry E.

Vin Zant, Wichita, at Parsons; Dr. Willard J. Kiser, Wichita, at Great Bend; Dr. Harold O. Williams, Cheney; Dr. Randall Weed, Humboldt; Dr. Lyle F. Schmaus, Iola; Dr. Raymond J. Beal, Fredonia; Dr. Garland Campbell, Arkansas City; Dr. Howard Snyder, Winfield; Dr. Harry J. Davis, Topeka; Dr. Irene Koeneke, Halstead; Dr. Thomas Hill, Arkansas City; Dr. C. H. Munger, Emporia; Dr. Charles H. Miller, Parsons; Dr. Lynn Hartman, Arkansas City; Dr. T. P. Butcher, Emporia; Dr. Karl Voldeng, Wellington; Dr. A. E. Titus, Cottonwood Falls; Dr. Penfield Jones, Lawrence; Dr. F. W. Huston, Winchester; Dr. W. K. Walker, Cedar Vale.

## DEATH NOTICES

### JAMES ROBINET BURNETT, M.D.

Dr. J. R. Burnett, 70, an active member of the Sumner County Medical Society, died at his home at Caldwell, February 23. He was graduated from Kansas Medical College, Topeka, in 1912 and practiced first in Bluff City, moving to Caldwell in 1918. During World War I he served in the Army Medical Corps. He had been in semi-retirement for several years.

\* \* \*

### GILBERT WILSON HAY, M.D.

Dr. G. W. Hay, 74, who had practiced in Parsons 38 years, died there March 3. He had retired in 1944 but resumed practice during World War II and continued active work until he suffered a stroke two years ago. He was a graduate of the Chicago College of Medicine and Surgery, and was an honorary member of the Labette County Medical Society.

\* \* \*

### CLARENCE LOGAN ZUGG, M.D.

Dr. C. L. Zugg, 76, an honorary member of the Cowley County Society who retired from active practice some years ago, died at Arkansas City, March 9. He was graduated from the College of Physicians and Surgeons in Kansas City in 1902 and later studied at the University of Kansas School of Medicine. He practiced first in Kansas City and moved to Arkansas City in 1916, specializing in eye, ear, nose and throat work.

\* \* \*

### SAMUEL M. HIBBARD, M.D.

Dr. S. M. Hibbard, 67, Sabetha, died at a Topeka hospital March 7. He was a graduate of Ensworth Medical College, St. Joseph, Missouri, in 1907, and practiced in Sheridan, Missouri, and Leona before locating in Sabetha in 1908. During World War I he served over-

seas in the Army medical corps. Because of poor health he retired from active practice in 1947. He was an honorary member of the Nemaha County Society.

\* \* \*

### SAMUEL DELOS E. WOODS, M.D.

Dr. S. D. E. Woods, 73, a member of the staff of the Osawatimie State Hospital 23 years and its superintendent 11 years until his resignation in January, died April 2. He was a graduate of the Hahnemann Medical College of the Kansas City University in 1902, and entered private practice in Council Grove, moving to Princeton in 1907. While there he served as president of the Franklin County Medical Society for one term. In 1928 he accepted a position on the staff of the hospital at Osawatimie. He was an active member of the Miami County Society at the time of his death.

\* \* \*

### CLAUDE EMETT HAMILL, M.D.

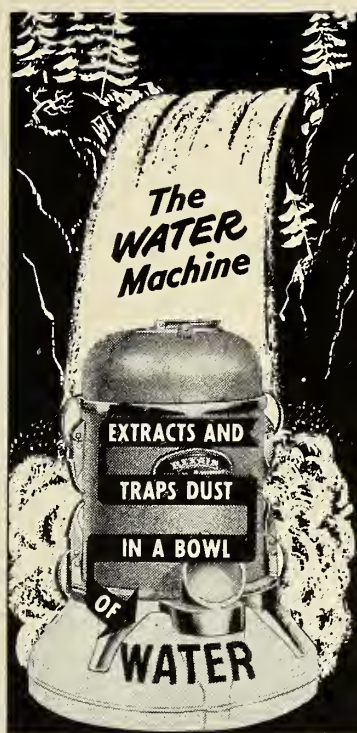
Dr. C. E. Hamill, 74, an active member of the Labette County Society, died at his home in Parsons April 6 after an illness of 18 months. He was graduated from Northwestern University Medical School, Chicago, in 1909 and began practice in Parsons shortly afterward. He was active in civic affairs there and continued to practice until recently.

\* \* \*

### FRANKLIN WALTER KOONS, M.D.

Dr. F. W. Koons, 79, Halstead, died April 18 after a ten-day illness. He was an honorary member of the Harvey County Society and had served as its president. After his graduation from the Kansas City Medical College in 1898, he practiced first in Nickerson, joining the staff of the Hertzler Clinic in Halstead in 1930. He retired from practice several years ago because of poor health.





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## COUNTY SOCIETIES

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The Mid-West Kansas Medical Society met at Pratt on March 5. Dr. Joseph W. Kelso, chief of the gynecological service at Oklahoma University Medical School, Oklahoma City, spoke on "Early Diagnosis of Carcinoma of the Cervix Uteri," illustrating the lesions with colored slides.

\* \* \*

The Shawnee County Medical Society held a joint meeting with the Shawnee County Farm Bureau at Garfield Park Shelter House, Topeka, on March 30. Dinner was served at 6:30, after which the physicians presented a forum on "Farm Accidents and Emergency Medical Care."

\* \* \*

A meeting of the Sedgwick County Society was held at Wichita, April 3. Dr. Paul R. Cannon of the University of Chicago spoke on "Some Current Problems in the Field of Protein Metabolism."

\* \* \*

A meeting of the Central Kansas Society was held at Hays, March 15. More than 50 physicians and members of the Auxiliary were present at the dinner meeting at the Lamer Hotel, at which Dr. F. R. Croson, Clay Center, was speaker. Dr. Croson described his recent European trip and showed pictures taken in Germany, France and Austria.

\* \* \*

The Southeast Kansas Society held its quarterly meeting at the Booth Hotel, Independence, March 16, with members of the Montgomery County Society as hosts. Seventy-six physicians and their wives attended. Dr. F. R. Croson of Clay Center, president of the Kansas Medical Society, was principal speaker, and Mr. Oliver E. Ebel of Topeka, executive secretary, discussed medical legislation. An honored guest at the meeting was Dr. C. H. Benage of Pittsburg, president-elect.

\* \* \*

Dr. Philip W. Morgan, Emporia, was speaker at a recent meeting of the Cowley County Society in Arkansas City. His subject was "Heart Disease in Adults."

\* \* \*

Members of the Geary County Society entertained the Golden Belt Medical Society at the Junction City Country Club on April 12. At the afternoon scientific program Dr. Paul C. Laybourne of the University of Kansas Medical Center spoke on "Psychosomatic Problems of Childhood," and Dr. Claude F. Dixon of the Mayo Clinic discussed "Malignant Disease of the Colon and Rectum." The program was followed by a dinner and business meeting. Dr. Oliver L. Martin, Salina, was named president for the coming year, Dr. Laurence S. Nelson, Jr.,

Salina, vice president, and Dr. Charles H. Joss, Topeka, secretary-treasurer.

\* \* \*

Tracheotomy and the management of diabetes were subjects for study at a recent meeting of the Wyandotte County Society. Dr. Clarence Steele spoke on tracheotomy, with Dr. Maurice Ryan leading the discussion. Dr. E. S. Miller gave a paper on the treatment of diabetes and Dr. W. H. Algie and Dr. M. H. Delp conducted the discussion. At the April meeting Dr. H. O. McPheeters, Minneapolis, Minnesota, spoke on "Modern Treatment of Varicose Veins."

\* \* \*

Members of the Sumner County Society entertained their wives, office assistants, the employees of the Hatcher Clinic and St. Luke's Hospital, and two guests from Wichita, Dr. Farris D. Evans and Dr. V. L. Pauley, at a dinner meeting at Harry's Cafe, Wellington, recently. Dr. Pauley entertained the group with a travel movie he took on a recent trip to Canada and Alaska. Dr. E. A. Evans, Conway Springs, who has been a member of the society since 1902, was given special recognition.

\* \* \*

A meeting of the Crawford County Society was held at the Hotel Besse, Pittsburg, with Dr. George Aaron, Kansas City urologist, as speaker. Twenty physicians attended.

\* \* \*

A meeting of the Labette County Society was held April 11 at the county health department offices in Parsons. Dr. John White discussed the civil defense program for the area and outlined the medical society's part in the plan.

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## THE KANSAS PRESS LOOKS AT MEDICINE

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### Editorial Against Socialized Medicine

The Wage Earner Forum, which is conducted by the McFadden Publications and which makes constant studies of labor thinking among 1500 families scattered throughout the nation, asked this question: "In England they have what is known as socialized medicine—that is, the government supplies free medical and health service to the people. There is talk of having such a plan in the United States. Would you favor such a plan here?"

The result of the poll was as follows: 26.9 per cent said yes; 45.8 per cent said no; 27.3 per cent replied that they didn't know enough about it.

Some interesting deductions can be made from this. First of all, it indicates that only about one-fourth of the wage earners are for socialized medicine, while nearly twice as many are against it



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John Rock, M.D., Boston .....	Gynecology
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This is all to the good. What is not to the good is that more than a quarter of the typical wage earners who answered haven't made up their minds.

It is high time that labor understood the stake it has in a free economy and free enterprise—and that goes for medicine as well as all other professions and businesses. Every time socialism takes a step forward, the danger to all of us—whether we are directly touched so far or not—is vastly increased. This point was stressed in a splendid speech recently made by William L. Hutcheson, and AF of L vice president. He said, in effect, that if free labor is to be preserved, the freedom of everyone else must be preserved too.

Labor, in its own self-interest, should join with the forces which are fighting enslavement—and which are fighting everybody's battle.—*Cherryvale Republican*, March 7, 1951.

\* \* \*

#### A Significant Milestone

A few weeks ago an eastern voluntary health insurance company passed a milestone which would have been passed unnoticed beyond the organization itself were it not for the fact that this particular milestone is another powerful argument against the government going into the insurance business. This particular company gave a dinner in honor of its having enrolled its 2,000,000th voluntary member in a little less than seven years of operation. While this particular company was enrolling two million members, another, one of the largest in the country, passed the 40 million mark during the last year . . .

It has been reliably estimated that within the next three years some 90 millions of America's 153 millions will be protected with health insurance which they themselves subscribe to and for which they themselves pay. It has not been many years ago when such insurance was hardly known among the rank and file American. In spite of facts, there are still those in Washington who continue to call upon all of us to "tighten" our belts to defend Europe against a possible attack, but those same fellows continue to plug for government control of the medical profession which is no more related to defense and/or war than a watermelon is related to a peony.

Having failed to get their pet scheme through during what were supposed to be peace years, it can be expected that the gang will turn on the heat "in the interest" of national defense. They may even manufacture another "crisis" and try to ram socialized medicine down our throats under such a guise. We have never yet heard of any one of them admitting that the American people and private insurance companies are doing a good job of insuring the country's millions against hospital care, medical aid and accidents. If these fellows would

pay more attention to what is going on in America and less to what is going on in England, all of us would be better off and all of us would be more assured than we are today of continued advancement of our great medical profession.—*Pratt Tribune*, March 13, 1951.

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## ANNOUNCEMENTS

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The American Physicians Art Association will have its usual art exhibit during the A.M.A. convention at Atlantic City, June 11 to 15. J. Henry Helser and Company, Inc., are new sponsors of the association and will award 200 trophies. A banquet will be held on Tuesday evening, June 12, at the Marlborough-Blenheim Hotel. Physicians desiring to participate in the show are asked to write the secretary, Dr. F. H. Redewill, American Physicians Art Association, 760 Market Street, San Francisco 2, California.

\* \* \*

The 17th annual meeting of the American College of Chest Physicians will be held at the Ambassador Hotel, Atlantic City, June 7 through 10. The Board of Examiners of the College announces that oral and written examinations for fellowship will be held on the first day, June 7. Candidates for the examinations should write the executive secretary of the College, 500 North Dearborn Street, Chicago 10, Illinois. Dr. Charles F. Taylor, Norton, is governor of the College for Kansas.

\* \* \*

The American Society for the Study of Sterility will hold its seventh annual meeting at the Ritz Carlton Hotel, Atlantic City, June 9 and 10. The registration fee for the session is \$10, and advance reservations are recommended since attendance will be limited to 400. Information on registrations may be secured from the Society, 20 Magnolia Terrace, Springfield, Massachusetts.

\* \* \*

The 29th annual scientific and clinical session of the American Congress of Physical Medicine will be held at the Shirley-Savoy Hotel, Denver, September 4-8, inclusive. In addition to scientific sessions, the annual instruction seminars will be held on all days except the last. Complete information may be secured from the Congress, 30 North Michigan Avenue, Chicago 2, Illinois.

\* \* \*

The Foundation of the American Society of Plastic and Reconstructive Surgery is offering awards for original contributions in plastic surgery. The contest for junior awards, two scholarships in plastic surgery of six and three months, respectively, is open to physicians in the specialty not longer than five



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years. A senior award will be given for the best essay on "Mass Treatment of Burns in Atomic Warfare," the winning essay to be presented at the annual meeting of the society in Colorado Springs, October 31-November 2, 1951. The contest closes on August 15. Complete information may be secured from the Award Committee, c/o Jacques W. Malinac, M.D., 11 East 68th Street, New York 21, New York.

\* \* \*

The American Board of Clinical Chemistry, Inc., will hold its annual meeting in Chicago, May 25 and 26. At that time consideration will be given to applications for certification that have been filed with the board. Since January 1, 300 requests for certification papers have been received, 53 per cent from those in private organizations, 24 per cent from those in hospitals, and 23 per cent from those in educational or governmental institutions. Those interested in obtaining applications for certification should send a covering fee of \$1.00 to Dr. Joseph W. E. Harrison, 1921 Walnut Street, Philadelphia 3, Pennsylvania.

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## BOOK REVIEWS

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*Paul Ehrlich. By Martha Marquardt. Published by Henry Schuman, Inc., New York, 255 pages. Price \$3.50.*

The biography of Paul Ehrlich is a valuable addition to the Life of Science Library. Miss Marquardt was Ehrlich's secretary for 13 years and presents a highly personalized account of his life in both its scientific and purely human aspects. Few men in the past half century have made more fundamental and far-reaching contributions to medical science than Paul Ehrlich. While still a student, he developed great interest in aniline dyes and an unusual facility in staining. On one occasion while he was a student in Breslau, the famous Robert Koch, visiting the laboratory, was told by one of the attendants, "That is little Ehrlich. He is very good in staining, but he will *never* pass his examinations."

Presently Ehrlich discovered the acid fuchsin method of staining tubercle bacilli and began a period of active collaboration with Koch himself. He became senior house physician in the clinic of Professor von Frerichs and, while there, developed the methods of staining blood preparations which mark the beginning of modern hematology. He also collaborated with von Behring in research on diphtheria antitoxin and worked out methods of standardizing and purifying the antitoxin, work which made the administration of diphtheria antitoxin both safe and effective.

From Berlin, he went to Frankfurt. Here he

developed his famous sidechain theory of immunity and obtained world-wide fame by the discovery of salvarsan. Ehrlich was the founder of chemotherapy and of modern hematology. In bacteriology, he did some of the most important work from the time of Pasteur and Koch to the present.

*Paul Ehrlich, eine Darstellung seines wissenschaftlichen Wirkens, a Festschrift*, written by his disciples and collaborators and published in 1914 on the occasion of his 60th birthday, is a balanced account of his scientific achievements. Miss Marquardt's book, with biographical details and an intimate account of Ehrlich's personality, is a valuable addition to the rather meager literature on the life of this outstanding physician.—R.H.M.

\* \* \*

*Physical Diagnosis. Fourth Edition. By Ralph H. Major. Published by W. B. Saunders Company, Philadelphia. 446 pages, 469 illustrations. Price \$6.50.*

This new edition of Dr. Major's *Physical Diagnosis* has been revised in such a way as to bring the nomenclature and references up to date. There are a number of new illustrations, and some new material has been added to the chapters on the diagnosis of cardio-vascular disease.

This book has long been recognized in the field of physical diagnosis as outstanding for its clarity, conciseness, and emphasis on the physiological basis in the production of physical signs of disease. The practice of quoting the original author in describing physical signs is noteworthy because it is easy to interject the personal viewpoint into a discussion and thus lose the original meaning.

The historical background is so interestingly presented as to awaken the reader to the importance of the history of medicine. Those of us who have used this text in medical teaching have found it to be superior for classroom work. The busy practitioner will find it well worth his time to renew his acquaintances with many of the important fundamentals of physical diagnosis that may have been crowded from his memory.

This book does honor, not only to the author, but also to the University of Kansas School of Medicine.—D.C.P.

\* \* \*

*Current Therapy—1951. Edited by Howard F. Conn. Published by W. B. Saunders Company, Philadelphia. 699 pages. Price \$10.*

Again we have the annual edition of *Current Therapy*. One would wonder whether sufficient advance or change in therapy has occurred in one year to warrant an annual edition of treatment. This remarkable book dispels all doubt as to its need and utility. If there ever was a medical volume





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Surgical Anatomy & Clinical Surgery, Two Weeks, starting May 14, June 18, July 23.  
Surgery of Colon & Rectum, One Week, starting June 4, September 17.  
Esophageal Surgery, One Week, starting June 4.  
Thoracic Surgery, One Week, starting June 11.  
Gallbladder Surgery, Ten Hours, starting June 18.  
Breast & Thyroid Surgery, One Week, starting June 25.  
Fractures & Traumatic Surgery, Two Weeks, starting June 18.

**GYNECOLOGY**—Intensive Course, Two Weeks, starting June 18, September 24.  
Vaginal Approach to Pelvic Surgery, One Week, starting June 11, September 17.

**OBSTETRICS**—Intensive Course, Two Weeks, starting June 4, September 10.

**MEDICINE**—Intensive General Course, Two Weeks, starting October 1.  
Gastroenterology, Two Weeks, starting October 15.  
Gastroscopy, Two Weeks, starting July 16.  
Electrocardiography & Heart Disease, Two Weeks, starting July 16.  
Liver & Biliary Diseases, One Week, starting June 4.

**PEDIATRICS**—Cerebral Palsy, Two Weeks, starting July 9.  
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This volume is a must for every practicing physician.—E.H.H.

\* \* \*

*Functional Anatomy of the Limbs and Back.* By W. Henry Hollinshead. Published by W. B. Saunders Company, Philadelphia. 341 pages, 122 figures. Price \$6.00.

The book is written in five sections. The first deals with anatomical terminology, tissues of the body, and organ and organ systems in brief but complete and understandable terminology. In the following four sections the author gives a systematic, thorough and practical treatment of the upper and lower limb, back, and head, neck and trunk.

The type is easily readable and emphasis of important anatomical structures is handled throughout by bolder type, which in retrospect serves to orient one quickly.

The illustrations, all diagrammatic, are excellent and are sufficient in number to serve as ready reference to points stressed by the author.

The text is full of anatomy with few superfluous phrases. I believe it would be difficult for one beginning in anatomy to digest its contents. To the more advanced student, or to practicing physicians who use it as a quick review or a handy reference, it will be a useful text.—M.P.

\* \* \*

*Diabetes Guide Book for the Physician.* Written and published by the Council of the American Diabetes Association's Committee on Education, 11 West 42nd Street, New York 18, New York. 79 pages.

This book is a good summary for the practicing physician. It does not profess completeness and can not be used as a source book. It is written largely in outline form. Thirty-six pages are devoted to the dietary prescription, food exchanges, and sample menus.

Probably because the monograph was published in 1950, there is no reference to NPH insulin. It also ignores the present question of the role of cholesterol in atherosclerosis by impartially recommending animal and vegetable fats in the diet tables and recommending fat allowances of as high as 130 grams daily.—G.R.S.

*Cancer As I See It.* By Henry W. Abelmann, M.D. Published by Philosophical Library, Inc., New York City. 100 pages. Price \$2.75.

In this monograph, the author presents his views on cancer, particularly the etiology of the neoplastic process. He feels that all forms of cancer are but different manifestations of a single infectious disease. The etiologic agent, termed a mold or fungus, growing outside the cells, causes an inflammatory process which the author regards as a form of cancer. Minute forms of this mold or fungus, termed "germ-viruses," growing within the cell produce cancer in the usual sense.

The book is intended primarily for the layman, and deals largely with generalities. The terms mold, fungus, germ and virus are used in such a broad sense that much significance is lost, and it is difficult to be sure of the author's meaning. One feels that there are not enough facts presented to support the author's contention, and that some of the conclusions drawn are not warranted.—D.M.G.

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## ABSTRACTS FROM CURRENT LITERATURE

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### Postanesthetic Nausea and Vomiting

*Treatment of Postanesthetic Nausea and Vomiting.* By Rudolph, Park and Hamilton, J.A.M.A., 144, 1283, Dec. 9, 1950.

Since the introduction of dimenhydrinate (dramamine) in 1947 many uses have been found for the drug, including motion sickness, radiation sickness, migraine, etc.

The authors summarize their use of dramamine pre-operatively for the purpose of preventing post-operative nausea and vomiting. Routine employed was that of giving 100 mgm. orally one hour before surgery and 100 mgm. suspended in 20 cc. of normal saline per rectum following surgery. This routine was used prior to spinal, general and local anesthesia with apparently marked decrease in incident of nausea. Statistics were not given because of small series.

The present lack of knowledge of the pharmacologic action of dramamine precludes the possibility of analysis of its therapeutic effect. The authors believe that the anesthetized patient develops a toxic labyrinthitis from the high concentration of the anesthetic agent in the blood stream during anesthesia. The sedative action of dramamine in motion sickness also embraces this impression.—H.F.S.

\* \* \*

### Vagotomy for Colitis and Ileitis

*Vagotomy for Idiopathic Ulcerative Colitis and Regional Ileitis.* By Philip Thorek, J.A.M.A., 145: 140-146, Jan. 20, 1951.

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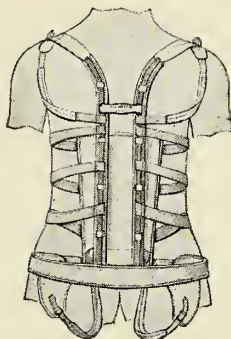
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vagotomies he performed on 20 cases of idiopathic ulcerative colitis and one case of fulminating mucous colitis, making 21 cases in all. Proper medical and psychiatric therapy had been used in all the cases, and four of these had had ileostomies performed elsewhere. A favorable response was shown in 80.9 per cent. No deaths occurred in this series. In the cases with small bowel involvement improvement also was shown. However, he states that to date it has been difficult to select patients and prognosticate those who will respond favorably.

Since it is necessary to rule out obstructive lesions and malignancy, he prefers the trans-abdominal vagotomy, even though the trans-thoracic procedure is easier to perform and may result in a more complete severance of the vagi.

At present none of these patients have suffered any ill effects and most have shown improvement; therefore, he feels that vagotomy in chronic, non-specific, ulcerative colitis warrants further investigation. From this report the author does not wish to draw any positive conclusions but hopes to stimulate interest in the field. To those who emphasize less radical therapeutic measures, he repeats that before any surgery is contemplated proper medical and psychiatric therapy should be thoroughly tried. "However, these patients must not be studied to death, nor must they be conservatively treated to the point of surgical irreversibility."

Discussion of this report: Albert F. R. Andresen, Brooklyn, feels that vagotomy is merely a phase of the present trend in favor of "psychosomatic surgery" and will gradually be abandoned. He believes much good can be done by the allergic approach.

Emile Holman, San Francisco, is of the opinion that vagotomy is highly experimental and that we should not neglect proved surgical methods of treatment, and the newer treatment of antibiotics. However, he feels that vagotomy should be studied fully and expresses appreciation to the surgeons who are willing to undertake these investigations.

Sidney Portis, Chicago, questions whether the vagus nerve innervates the descending portion of the colon. He believes that colectomy in cases of long standing ulcerative colitis is a preferred treatment and should be performed much earlier than in the past.

Frank Lahey, Boston, has never been enthusiastic about vagotomy, as he feels it is a round about way

to deal with a tangible lesion. If medical procedures fail, then early ileostomy and total removal of colon and rectum are really successful.

Albert Rowe, Oakland, believes in the allergic approach to treatment. Walter L. Palmer, Chicago, does not feel that vagotomy is a rational approach. He agrees with Lahey's concept of surgery when one is dealing with neoplasm or stricture.—J.J.H.

## AMERICAN BOARD EXAMINATIONS

- Anesthesiology.* Sec. Dr. Curtiss B. Hickox, 80 Seymour St., Hartford 15, Conn. Oral, Memphis, Oct. 14-17.
- Dermatology and Syphilology.* Sec., Dr. George M. Lewis, 66 East 66th St., New York 21. Oral, New York, June 8-10.
- Internal Medicine.* Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3. Written, various centers, Oct. 15.
- Obstetrics and Gynecology.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.
- Ophthalmology.* Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine. Oral, New York, May 31-June 5; Chicago, Oct. 8-13.
- Otolaryngology.* Sec., Dr. Dean M. Lierle, University Hospital, Iowa City. Oral, Chicago, Oct. 9-12.
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- Radiology.* Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn. Oral, Atlantic City, June 5-9.
- Surgery.* Sec., Dr. J. Stewart Rodman, 225 South 15th St., Philadelphia. Written, various centers, October, 1951. Final date for filing applications is July 1.
- Thoracic Surgery.* Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit.
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## Head Pain as a Diagnostic Lead

Frequently the presence of head pain is overlooked. The physician learns of it only if he has made an effort to elicit the information. Since the etiology of the pain is the basis of rational management, the patient should be warned against taking medication before diagnosis is made.

Friedman<sup>1</sup> deplors the tendency to call any chronic recurring headache migraine. Careful history-taking and full physical and neurological examinations are essential for accurate diagnosis. A good starting point is a description of the headache—its character, laterality, frequency and intensity.<sup>2</sup>

The following chart gives briefly the primary diagnostic leads and treatment for the most common types of headache.

Etiology of Headache	Primary Diagnostic Data	Primary Therapy
Inflammatory e.g., Meningitis Abscess	Inflammation of intracranial structures; fever; leucocytosis; bacteriologic diag.	Specific: sulfonamides and antibiotics. Symptomatic: analgesics.
Tumor	Pain varies as spinal press. changes; skull X-ray.	Specific: surgery. Symptomatic: analgesics &/or hypnotics.
Sinusitis	Sinus congestion and infection; cloudy X-ray.	Specific: antibiotics and drainage. Symptomatic: analgesics.
Hypertensive	Hypertension present but pain not related to b.p. level; Di-hydroergotamine relieves pain.	General hypertention therapy; sedation. Symptomatic: analgesics.
Migraine & other vascular headaches	Headache: recurrent, intense, throbbing. No organic causation; migraine in family; patient: energetic, perfectionist. Visual prodromata; g.i. upset during headache.	To abort attack: oral ergotamine plus caffeine. General: adjustment to minimize nervous stress.

Data here tabulated is from: Wolf, G., Jr.,<sup>3</sup> and Friedman, A. P.,<sup>4</sup>

Cecil<sup>5</sup> ranks vascular headaches, e.g., migraine and tension headaches, as the most commonly encountered of all. Because of their functional nature and usual recurrence at frequent intervals, they present a long-term therapeutic problem.

Therapy is conducted along two lines:

1) *Psychotherapy to reduce the frequency of attacks. This consists mainly of advice on emotional adjustment to stressful situations and guidance toward a good balance between work and relaxation.*

2) *Treatment of the distressing attack to prevent the usual period of incapacitation. Many investigators have reported that ergotamine preparations are effective for relief of the acute migraine attack in 80% of cases.<sup>1,6</sup> The drug is given immediately when an attack is approaching and dosage adjusted to the needs of the individual.*

1. Friedman, A. P. and von Storch, T.: 99th A.M.A. Session, June 1950. 2. Butler, S. and Hall, F.: M. Clin. N. Amer., p. 1439 (Sept.) 1949. 3. Wolf, G., Jr.: M. J. 34:25, 1951. 4. Friedman, A. P. and Conn, H. T.: Current Therapy, 1950, p. 563; Saunders Co., Phila. 5. Cecil, R. L.: A Textbook of Medicine, ed. 7, 1948, p. 1483; Saunders Co., Phila. 6. Horton, B. et al: Staff Meet. of Mayo Clinic 20:241, 1945.

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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

Owned and Published by The Kansas Medical Society

Volume LII

JUNE, 1951

No. 6

## Carcinoma Developing In Jejunal Ulceration Following Gastroenterostomy For Peptic Ulcer: A Case Report\*

Wendell A. Grosjean, M.D., and James M. Davis, M.D.

Winfield, Kansas

Of the various complications developing following gastroenterostomy for peptic ulcer, jejunal ulceration is the most common, the incidence being about 15 per cent.<sup>1</sup> However, malignant degeneration developing primarily in one of these jejunal ulcers following gastroenterostomy must be extremely rare. In a rather comprehensive review of the literature, only one such case was found, this being reported by Santy<sup>2</sup> in 1939. His patient was a 45-year-old male on whom he operated in September of 1925. Finding a large ulcer on the lesser curvature of the stomach, he elected to do gastroenterostomy because of the poor condition of the patient. Two months later, November, 1935 (sic), he had gained 10 kilos and was then lost sight of for 13 years, at which time he returned giving a history of a sudden change in his condition three months previously.

He had blood in the stools and his erythrocytes numbered 1,600,000. A radiograph showed enormous dilatation of the anastomosed jejunal loop, and at operation there was found on the posterior surface of the dilated jejunal loop, immediately at its contact with the anastomotic orifice, a lesion the diameter of a five-franc coin with the tactile sensation of neoplasm. Extensive gastrectomy and jejunectomy, affecting 15 cm. of the anastomosed intestine, was done, and the operative specimen showed jejunal ulceration with raised borders at the anastomotic orifice which was diagnosed by Pr. Noel "metatypical glanduform epithelioma."

No mention was made of any gastric lesion or extension to the gastric mucosa, so it is assumed that the lesion was primarily in and confined entirely to the jejunum.

Carcinoma of the stomach following gastroenterostomy for peptic ulcer has been reported a few times.\*\* Orringer<sup>3</sup> recently reviewed the literature

and found 27 verified cases and added five from the records of the Mt. Sinai Hospital. One such was seen in this clinic in 1942. Apparently the majority of these lesions involve the gastroenteric stoma and in one<sup>4</sup> a segment of jejunum was also involved, but in none is there a suggestion that the lesion was primary in the jejunum.

The following is a case report of carcinoma developing primarily in a jejunal ulcer 15 years after gastroenterostomy for duodenal ulcer:

The patient, N. C., a 67-year-old male, suffered a ruptured pyloric ulcer on the 10th of October, 1935, for which simultaneous closure and short loop posterior gastroenterostomy was done. He did well for 14½ years, then rather suddenly began going down hill, developing a sense of fullness in the abdomen followed by pain, nausea and vomiting. The vomitus contained bile and previously eaten food. There was no gross evidence of bleeding. He made some gains on an ulcer regime for a while, but did not maintain it, and was referred because of continued vomiting and loss of weight, which amounted to 40 pounds in six months.

On physical examination, there was nothing remarkable except evidence of marked weight loss and some tenderness, but no palpable mass beneath the previous operative scar. Radiographic studies showed a dilated stomach and duodenum with obstruction near the ligament of Treitz. There was no evidence of a functioning gastroenterostomy. At five hours, almost 100 per cent of the barium was retained in the stomach and duodenum (Figure 1).

\* Since this paper was submitted, a publication has come to our attention by O. Visintin (Carcinoma primitivo della anastomosi gastro-digiunale dopo gastrectomia per ulcera duodenale. *Minerva Chir.* 4: 545-47. 1949) in which he reports a patient on whom gastric resection (Polya-Balfour) for duodenal ulcer was done in October, 1928. He did well until 1947. At re-operation, a non-resectable carcinoma involving the stomach, but with infiltration almost exclusively in the jejunum, was found. The histopathology was adenocarcinoma. He reviews three other cases from European literature who developed primary carcinoma of the gastric stump, 7, 10 and 13 years respectively after subtotal gastrectomy with "operational diagnosis of non-degenerative gastric ulcer." He also comments on three others he knew about but had not been published.

\*From the surgical service of the Snyder-Jones Clinic, Winfield, Kansas.

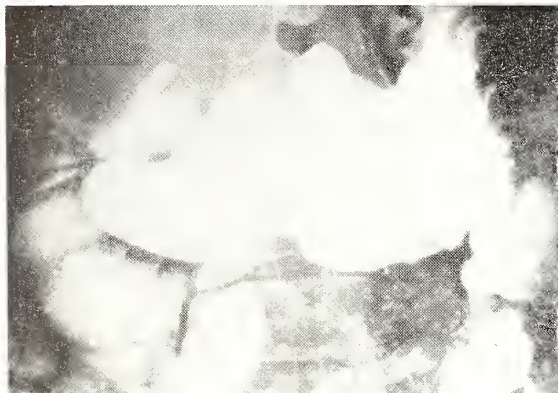


Figure 1. Five-hour radiograph of stomach showing dilatation of both stomach and duodenum with almost complete retention. (Some barium seen in colon from previous barium enema.)

Red blood cells numbered four million and hemoglobin was 12 grams. Urinalysis was normal. Serum proteins were 5.40 mg. per cent and numerous ion studies which were carried out were within normal limits. Gastric analysis showed a trace of blood with Hematest and the free hydrochloric acid was 30 with total acidity 58.

The patient was prepared for surgery over a period of a week and at operation, October 21, 1950, a mass was present involving the posterior surface of the transverse colon, the greater curvature of the stomach and the jejunum, eight to 10 cm. beyond the ligament of Treitz. The mass had the feel of a malignant lesion although the origin could not be determined. There were no metastatic deposits in the liver and the lymph nodes present were soft and had a non-malignant feel. It was elected to remove the mass by wide excision. This involved a transverse colectomy, sub-total gastrectomy and resection of a portion of the jejunum beginning at the duodenojejunal juncture. The jejunal and colonic continuity were reestablished by end to end anastomosis, then antecolic, anti-peristaltic, gastro-

jejunostomy was carried out, and a small knuckle colostomy proximal to the colon anastomosis was made, after which the abdomen was closed in layers without drainage. He was ambulatory from the first postoperative day and his convalescence was uneventful. He was given approximately four weeks to improve his nutrition before the colostomy was closed. Five and one-half months following surgery, he is doing well without evidence of recurrence.

The pathologic report follows: The operative specimen consists of the lower three-fourths of the stomach amputated at the pylorus, 39 cm. of jejunum, the transverse colon and omentum in one mass. A hard lesion is present in the jejunum where it is attached to the greater curvature of the stomach by previous gastroenterostomy, and the posterior surface of the colon is tightly bound to this mass. The opened specimen shows the gastric mucosa to have a normal appearance except in the lowermost portion where the rugi are smoothed out. There is no ulceration. The previous gastroenterostomy is patent, but on the jejunal side of the stoma there is an ulcer crater with rounded edges which is stony hard and measuring three cm. in diameter. Numerous soft lymph nodes are present in the jejunal mesentery. There is no gross involvement of the colon. Numerous microscopic sections through the ulcerated area at the stoma show a sharp line of demarcation between the ulcerated and the non-ulcerated area, the former being confined to the jejunum. A fibrinous exudate covers the surface of the ulcer and there is much round cell infiltration into the fibrous tissue beneath. Numerous nests of malignant cells tending to form glands in almost all instances are seen in the ulcerated area away from the stomach and in some areas beneath the jejunal mucosa (Figures 2 and 3). The colon is involved only by inflammatory reaction. No malignancy is seen in any

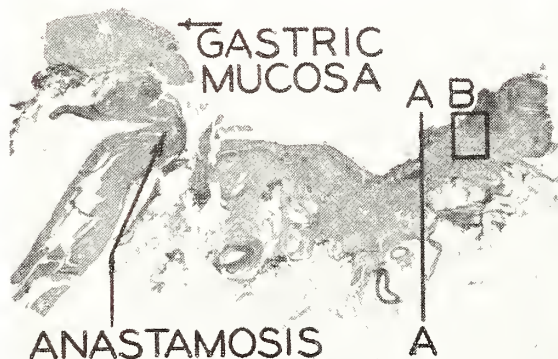


Figure 2-A. Enlarged photograph through ulcer and stoma. Ulcerated area confined entirely to the jejunum. No malignancy seen between the line A. A. and the gastric mucosa.

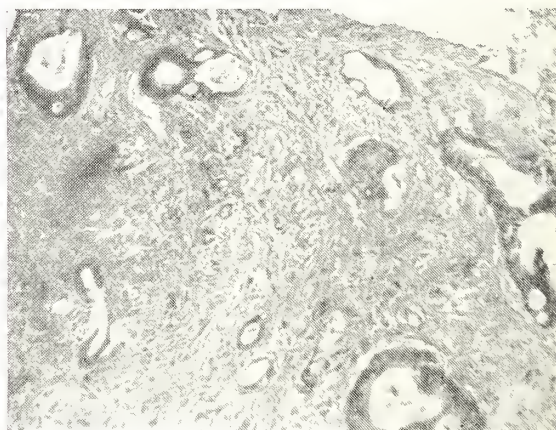


Figure 2-B. Photomicrograph showing adenocarcinoma in jejunal ulcer from area marked B in Figure 2-A.



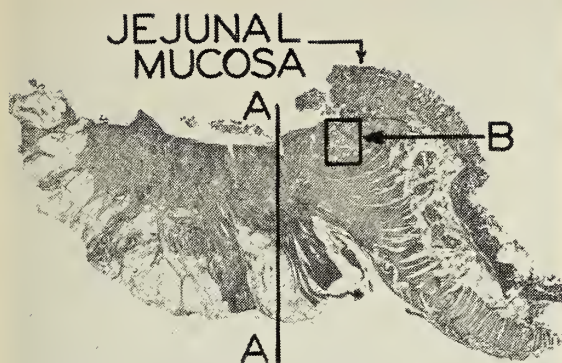


Figure 3-A. "Jejunal" side of stomal ulcer. No malignancy to the left of line A. A.

of the lymph nodes. Diagnosis: Adenocarcinoma of the jejunum developing in a marginal ulcer.

#### Discussion

Both of these cases present some features in common. Each had been symptom free for years following gastroenterostomy for peptic ulcer, although one was done for gastric and one for duodenal ulcer. Symptoms returned rather suddenly, in each instance with the development of marginal ulcer, later shown to have undergone malignant change. These symptoms were due largely to the high degree of obstruction which was produced by induration at the site of a jejunal lesion. Santy's patient, however, also suffered from severe anemia as the result of hemorrhage, whereas ours did not. While not specifically stated, the x-rays accompanying Santy's report would suggest that the original anastomosis was a short loop retrocolic type, the same as ours.

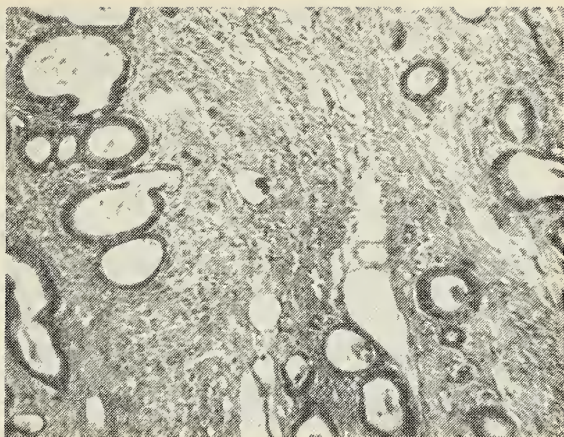


Figure 3-B. Photomicrograph of tissue from area B in Figure 3-A.

Why malignant change does not occur more often in marginal ulcers, is open to conjecture, but apparently the inherent lack of potential of the epithelium of the small bowel for neoplasia is an important factor.

#### Summary

A rather comprehensive review of the literature reveals only one case previously reported of carcinoma developing primarily in a jejunal ulceration following gastroenterostomy for peptic ulcer; this case is summarized.

Details of an additional case are reported.

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### 1952 MEETING DATES CHANGED

Because of a conflict with another meeting being held in Kansas City in May, 1952, the dates of the 93rd annual session of the Kansas Medical Society have been changed from May 5-8, 1952, to April 27-May 1, 1952. Mark the new date on your calendar and plan to attend.

#### 93rd ANNUAL SESSION

Kansas City, Kansas

April 27-May 1, 1952



## The Surgical Treatment of Extensive Skin Cancer of the Lower Eyelid

Creighton A. Hardin, M. D.,\* and David W. Robinson, M. D.\*

Kansas City, Kansas

The surgical attack on some skin cancers of the eyelids and adjacent areas with immediate repair has some particular advantages. While there is danger of corneal exposure complications, removal of the malignancy can be followed by immediate definitive repair. Such a plan of procedure transgresses the usually followed principle of waiting a reasonable period of time after cancer extirpation to be sure substituted parts are not covering and obscuring recognition of recurring carcinoma. Radical block excision of cancer is mandatory, an adequate peripheral zone of normal tissue being included in the resection.

Skin carcinoma of the head and neck usually does not metastasize. Ackerman<sup>1</sup> estimates that not more than five per cent of epitheliomas from this area spread to the regional nodes. A routine pre-operative search is made for lymph node involvement and regional lymph node resection is carried out when indicated. Careful microscopic examination of the removed block of tissue gives reassurance of adequate excision or allows the surgeon, if the report is positive, to excise more widely. Squamous cell carcinoma located in the

frontal, malar, temporal, and outer canthal areas usually metastasizes to the preauricular nodes. Squamous cell carcinoma of the median forehead, inner canthus, naso-labial fold, and nose may spread to the submaxillary or cervical nodes.

Basal cell epithelioma, though chronic, may become locally invasive.<sup>4</sup> This type of cancer practically never metastasizes. Reported cases are most likely baso-squamous in type, metastases representing the squamous cell element. Carcinomas of the sweat glands are infrequent<sup>5</sup> and definitely radio-resistant,<sup>2</sup> surgery offering the best chance for cure.

Many patients with extensive involvement of the lower eyelid have a cicatricial ectropion due either to the malignant process or to previous radiation. The irritative complications of excessive tearing, conjunctivitis, exposure keratitis, and corneal ulceration are quite common.

The inner canthal area involved by carcinoma can best be treated with some form of irradiation. This area is difficult to reconstruct. The type of repair used is often unsatisfactory in that the reconstructed lower lid cannot be securely anchored to the inner canthus. Surgical excision and repair of the inner canthal area is necessary when malig-

\* From the Department of Surgery, Division of Plastic Surgery, University of Kansas Medical Center, Kansas City, Kansas.



Figure 1, A and B. 1-A at left. 66-year-old white male. Baso-squamous carcinoma of lower eyelid. Duration seven years. Treated seven years ago and four years ago with radiation. Cicatricial ectropion. Hyperkeratosis and "farmer's" skin. 1-B at right. Wide surgical excision of lower eyelid and skin of face. Tarsal plate preserved. Thick split graft taken from buttock area. Surgical synchia outer canthus. Upper eyelid can completely close and protect eyeball.



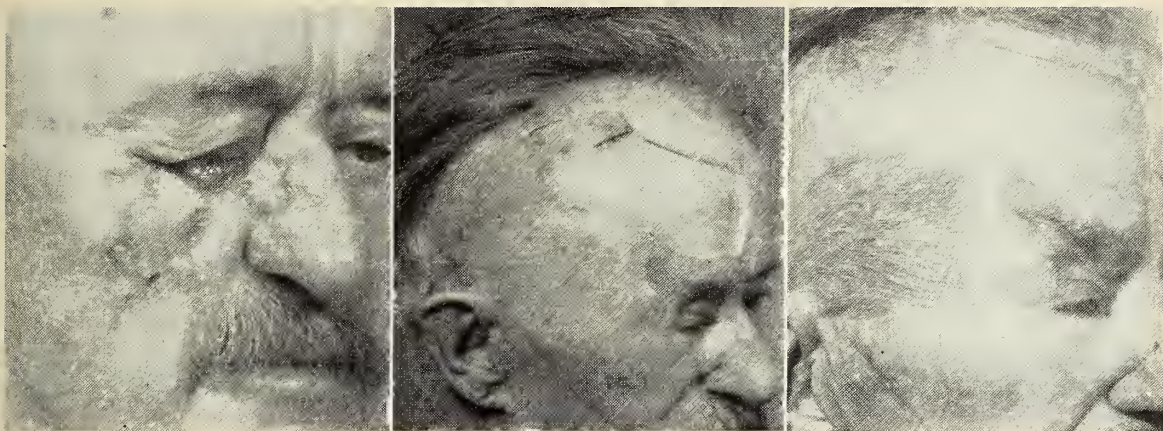


Figure 2, A, B, and C. 2-A at left. 79-year-old white male. Ulcerated squamous cell carcinoma of lower eyelid, nose, cheek. No previous treatment. 2-B in center. Radical excision of entire lower eyelid, skin of nose, cheek, and outer one-third of upper eyelid and temple area. Replacement with rotated forehead flap. 2-C at right. Immediate split skin graft to cover defect of forehead. This flap is not delayed. Arterial blood supply preserved in outlining flap. One stage procedure.

nancies recur after inadequate radiation or deep invasion. Small epitheliomas of the eyelids, when seen early and treated adequately by surgery or radiation, usually present no problem.

When malignant invasion of the lower lid is extensive, all structures should be removed, the skin, tarsal plate, and involved conjunctiva en bloc. The most gratifying results are obtained by substituting a rotated flap from the forehead for an entire lower eyelid. The desired flap is outlined and based laterally on the fronto-temporal area, the free margin being medial in hair-free forehead skin. To insure viability the flap should contain a branch of the superficial temporal artery which often can

be seen or palpated accurately. If properly planned, the flaps can be elevated without delay and rotated into the surgical defect. Sickie flaps\* (New and Erich) can be used if more length of the flap is needed. Good planning, careful fitting, and suture gives no difficulty. The uninvolved conjunctiva is sutured to the superior margin of the flap. If not enough conjunctiva is present, the lid can be halved after the method of Wheeler and the upper lid conjunctiva sutured by its free lower margin to the stump or cuff of lining in the lower sulcus. The lids are united in this manner and detached 10 to 14 days later. The defect of the flap donor bed on the fronto-temporal area is covered by a thick split



Figure 3, A and B. 3-A at left. 63-year-old white male. Ulcerated basal cell carcinoma treated with previous radiation. Exposed necrotic malar bone. Cicatricial ectropion. 3-B at right. Excision of ulcerated carcinoma and involved bone. Rotated forehead flap. This patient died of a coronary occlusion at home while awaiting next stage.





Figure 4, A, B, C, and D. 4-A at left. 63-year-old white female. Five years duration of a basal cell carcinoma. Treated by radiation four years ago with recurrence. 4-B, second from left. Elevation of a forehead flap based on the bridge of the nose. Forehead undermined and closed primarily. Distal end implanted in area of surgical excision. 4-C, second from right. Flap amputated. Proximal end revised at bridge of nose one month after elevation. 4-D at right. Flap smoothed out two months after primary surgery. Still needs more defatting of flap and Z-plasty of inner canthus.

graft usually taken from the thick hairless skin of the back. The base of the flap may be severed in 18 or 21 days, the excess of the flap being returned to the forehead. At that time, minor revisions can be accomplished.

The chief purpose of the reconstruction is to provide protection to the globe. A substitute eyelid made in this manner has no intrinsic motion. It does provide permanent coverage to the lower half of the globe. The upper intact eyelid provides active motion. This type of graft is of good color and blends in well cosmetically with the rest of the face. Unfortunately, the reconstituted lid may sag. It has to be fitted snugly to maintain its elevation to the globe. A sling of fascia lata may have to be inserted later to hold up the lower lid. If a delayed flap is used, it can be lined previously by buccal mucosa. This works better than skin which, in combination with the conjunctiva, produces odoriferous secretions. Since the lacrimal duct is removed in these excisions, tearing is constant and must be accepted.

The surface replacement for less extensive surgical loss can be accomplished by means of a full thickness or split skin graft. This type of coverage is utilized when the tarsal plate is uninvolved and sup-

port to the eyelid is present. A split skin graft, when used, should be 50 per cent larger than the defect to allow for the inevitable shrinkage. The thicker the graft used the less the contraction. Post-auricular or supraclavicular skin as full thickness skin graft produces the best permanent color matching (Brown).<sup>3</sup>

#### Summary

1. A recommendation for the combined methods of surgical excision with immediate reconstructive procedures is made for the treatment of extensive carcinoma of the lower eyelid.
2. Eradication of malignancy, restoration or preservation of function, and pleasant cosmetic appearance are the goals of this treatment.
3. Illustrative cases are presented showing the plan of treatment.

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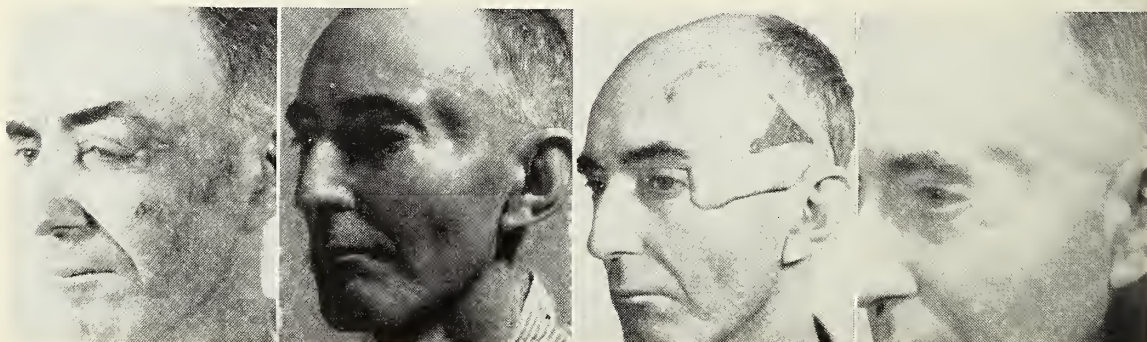


Figure 5, A, B, C, and D. 5-A at left. 42-year-old white male seen originally in 1946 with history of swelling for nine months. Excision of keratinizing papillary carcinoma. 5-B, second from left. Three years after original surgery. Dermatitis and subcutaneous nodules present at outer middle quadrant. Clinically thought to be recurrence. 5-C, second from right. Excision of skin of entire area, no malignancy, only chronic dermatitis. Defect filled with one stage rotated forehead flap. 5-D at right. Butt end of the temporal flap returned to scalp. One month after primary surgery.



# Uses of Radioactive Gold Colloid in Therapy and Palliation of Neoplastic Disease

William N. Harsha, M. D.\*

Kansas City, Kansas

About 1900, the miracle tool of cancer therapy was radium. Useful as radium has been, it is interesting to note that had it never been available until now, the isotope-using physician might have passed it up completely in favor of other radioactive materials. The truth of this comment may be seen from a few simple considerations and these considerations will emphasize the potential usefulness of radioactive gold colloids.

Implanted radium or any other radioactive substance has the advantage over deep x-ray therapy in that it delivers a maximum of radiation inside the malignant lesion and the surrounding tissues and skin receive lesser amounts of radiation according to the inverse square law. With radium, however, the alpha and beta particles, which are the most efficient conveyors of radiant energy at short ranges, are filtered out by the heavy gold or platinum capsule. This allows only gamma rays to emerge, and gamma rays having a long range are poorly absorbed, many escaping into healthy tissue.

Furthermore, radium implanted in a tumor must be completely recovered. This is so because it is an extremely toxic agent, very expensive, and has a long half-life (of the order of 1590 years). These considerations have ruled out the possibility of implanting a tumor with the element radium to the end of destroying the radium containing tumor.

These limitations are not imposed by some of the new isotopes, especially those produced by neutron bombardment in a uranium pile of naturally occurring elements. Gold <sup>198</sup> for instance, combines many of the qualities needed for an ideal agent to be used for local irradiations of a tumor. It has a short half-life (that is the time in which one-half of its ionizing radiation has dissipated itself) of 2.7 days. This is not too short a period though to prevent air shipment from the manufacturer to the therapist.

Ninety per cent of the ionizing radiation is contributed by beta particles which have a maximum ionizing range of eight millimeters in tissue and an average range of less than one millimeter, which represents an average energy of 0.44 million electron volts. The remaining 10 per cent is in the form of energetic gamma emissions.

Gold can be prepared in a state of great purity for insertion into a uranium pile, and thus the occurrence of undesirable types of radioactivity (re-

sulting from neutron activation of impurities) can be ruled out.

The therapeutic implications of all these properties of gold <sup>198</sup> can hardly be overlooked, and investigators have been busy for the last 10 years with the preliminary work. The most important consideration is how much radioactivity can be safely injected into a tumor without producing necrosis of the surrounding tissues.

The unit of dosage is the millicurie and for the isotope, gold <sup>198</sup>, 0.1 millicurie per gram of tumor, if the gold is evenly distributed, delivers the equivalent of 7,600 roentgens of ionizing radiation. Clinical and experimental studies have shown, however, that when the radiation is delivered by infiltrating the tumor with gold <sup>198</sup> colloidal suspension, the amount that is tolerated without sloughing and necrosis is much higher than would be expected on the basis of roentgen equivalents. In some cases as much as 10 times the calculated safe dose (by x-ray bombardment) can be administered by this means.

Radioactive gold colloid for human use and for a large part of animal investigation is prepared by the Abbott Laboratories in North Chicago from neutron bombarded gold foil delivered from the uranium pile at Oak Ridge, Tennessee. More recently, the gold foil has been irradiated in the chain reacting pile of Argonne National Laboratories in Chicago. The radioactive gold foil is converted to a gold chloride by solution in aqua regia and then dispersed in colloidal form by reduction with ascorbic acid in the presence of gelatin. The colloid is put up in sterile vials of standardized activity and shipped by air express to the user. The whole process from introduction of non-radioactive gold foil into a pile to the final sealing of sterile vials of radio gold colloid takes about 20 hours. The final product has an activity of from 15 to 20 millicuries per cc. The colloids produced by such chemical technique have particle sizes from 100-400 mu, some as small as 10 mu being present.

As much as 750 millicuries have been synthesized at once. Handling of such large amounts of radiation presents a great radiation hazard, even considering that only 10 per cent of the activity is in the form of penetrating gamma rays. Protection of technical personnel is achieved by doing all chemical, bottling and measuring procedures behind heavy lead shielding with remote control apparatus.

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The insoluble and physiologically inert form of radioactive colloids represents only one form of isotope therapy. The ultimate consideration of all radio isotope therapy will be tissue specificity, and ideally specificity in the malignant cells only. Colloidal suspension of inert metals meets this requirement by the mechanical fact that they will stay where they are infiltrated. Another isotope that is well established is radio iodine. This isotope localizes in thyroid tissue by fact of chemical specificity. Little work has been done to date on many of the inorganic and organic compounds, to which therapeutic amounts of radioactive isotope can be attached. Theoretically, many of these compounds might display tissue or tumor specificity.

Of the 750 isotopes that can be produced in the uranium pile, only five show the most highly desirable characteristics and 22 may have certain special applications.

Animal investigations in mice and rats using radioactive gold colloids, when administered parenterally, show that the biological decay (that is the amount of isotope lost from the animal), is less than 2.5 per cent in urine or stools. Of the isotope lost, experiments measuring particle size of gold colloid show it to be the smallest particles, generally less than 100 mu, the larger particles remaining in the body.<sup>1</sup>

Intracardiac and intrasplenic instillation of gold <sup>198</sup> colloid produces a transient high circulation blood level during the first hour, falling to near background counts after this period. After 10 hours, high concentrations of larger colloids (150-300 mu) are found in liver and spleen, and smaller particles (10-100 mu) are found in lung and lymph nodes.<sup>2</sup>

When radioactive gold is injected into a variety of normal tissues, 97 per cent of the injected activity is retained in the tissues. These studies are for tracer levels and it is theoretically possible that instillation of therapeutic doses might kill the phagocytic cells, thus allowing greater amounts of colloid to be excreted due to blocking of the tissue retaining mechanisms.<sup>3</sup> I know of no experimental work to verify this point.

In cats and mice, following intrathoracic and intraperitoneal instillation of radioactive gold colloid, high levels in spleen and liver are consistently found. Sporadically, the bone marrow showed a high concentration. Gold is uniformly distributed in liver as displayed by auto radiographic techniques.<sup>4</sup>

In mice with transplanted carcinoma or sarcomas, the ability of the tumor to retain infiltrated radioactive gold colloid varied according to the amount of necrosis and the vascularity present. The more solid tumors retained as much as 95 to 99 per cent of gold infiltrated. Uniform distribution of gold in tumor could not be achieved, but rather "puddling"

of the gold occurred. It was, however, possible to produce complete regression of tumor by the uneven infiltration techniques.<sup>5</sup> The rate and completeness of necrosis and regression of transplanted tumors was enhanced by systemic medication with nitrogen mustards.<sup>6</sup>

The uses of radioactive gold colloid in humans can be summarized by the following observations. Hahn has reported success in intravenous injection of radioactive gold in palliation of Hodgkin's disease, lymphosarcoma, and leukemia.<sup>7,8</sup> He has also treated a large number of patients with tumor masses by direct infiltrations of tumor with gold colloid, largely in patients with recurrent or inoperable cancer. This original standard of treatment was to estimate tumor volume and to infiltrate the mass in such a fashion that 6000 roentgens per gram of tumor was instilled. His schedule now is about 20,000 roentgens per gram, and with this dose he is about to cause infiltrated tissue to slough. The technique of infiltrating tumor with some compound is like radical cancer surgery in that it is not possible to see the radiating arms of the extending cancer. It is necessary either to treat the main mass or to sacrifice much normal and frequently vital tissue.

Leroy and Clarke are employing gold <sup>198</sup> colloid in infiltrating recurrent carcinoma by laparotomy or thoracotomy at 10-day intervals until tumor necrosis results.<sup>9</sup>

Hahn reports consistently good results in reducing fluid formations of metastatic pleural or peritoneal implants.<sup>4</sup>

Jones, Wrobel and Lyons have investigated the localization of radio colloids by active phagocytosis by reticuloendothelial cells.<sup>1</sup> Such phagocytosis particles are concentrated in liver, spleen and bone marrow. It is possible by intravenous injection to deliver tremendous doses of radiation to the reticuloendothelial system.

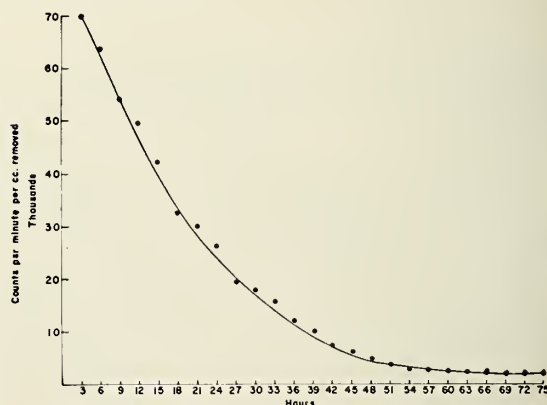


Fig. 1. L. C. — Metastatic adenocarcinoma to rt. pleura with hydrathorax. Thoracentesis to remove as much fluid as possible, followed by instillation of 30 mc. Au<sup>198</sup> colloid. At end of 75 hours 16% of administered dose recovered (corrected to time of instillation).

Figure 1



When gold <sup>198</sup> colloid is instilled into a normal urinary bladder, about 30 per cent is absorbed into mucosa and 15 per cent transmitted to regional lymph nodes in 15 hours.<sup>11</sup>

Rather limited personal experience with intrathoracic and intraperitoneal instillation of radioactive gold colloid in patients with advanced neoplastic diseases renders some information.

By measuring standard points over the chest or abdomen with a columnated Geiger-Mueller tube, it can be demonstrated that gold colloid instilled into thorax or abdomen is readily and evenly distributed to all parts of the space. In the case of intraperitoneal instillation, the uptake by draining lymph nodes of the peritoneum as high as the left subclavian group of lymphatics can be demonstrated.

Using therapeutic doses of from 20 to 100 millicuries of gold <sup>198</sup>, less than five per cent of the dose is lost in urine and stools. Within eight hours, a peak is reached in the blood which falls rapidly to near background at 36 hours.

#### Summary of Patients

L. C., a 33-year-old white female, had a right radical mastectomy for scirrhous adenocarcinoma seven years previously. Four year later, she sustained a pathological fracture of her third lumbar vertebra, which responded satisfactorily to x-ray therapy. The patient had experienced progressive dyspnea and developed a right hydrothorax six weeks prior

to our study. Thoracentesis every 10 days was required for relief. The patient received 30 millicuries of gold <sup>198</sup> colloid into her right chest after 700 cc. bloody fluid had been removed, leaving her thorax as free from fluid as possible. This was important, as concentration of gold colloid on the surface is the only way that a therapeutic effect can theoretically be accomplished. In that the beta emissions from gold <sup>198</sup> penetrate an average of one mm. of tissue, only gold in contact with pleura or peritoneum will deliver effective radiation. The instillation was painful for about 30 minutes with diaphragmatic type irritation.

Figure 1 shows the rate of disappearance of gold colloid from fluid as measured by hourly removal of fluid from chest cavity via a polyethylene tube. At the end of seven days, 80 per cent of gold had been removed from fluid (a rough approximation based on apparent rate of fluid formation during the seven study days). Less than two per cent was lost in urine and stools. The patient received six treatments of 30 to 50 millicuries each, at weekly intervals. On the third week, a rapid increase in fluid was noticed, followed by a undetectable amount of fluid after the seventh week of observation. The fluid removed by thoracentesis rapidly changed from bloody to serous fluid. The total protein content of the fluid rapidly changed from nine to three gms.



Figure 2-A

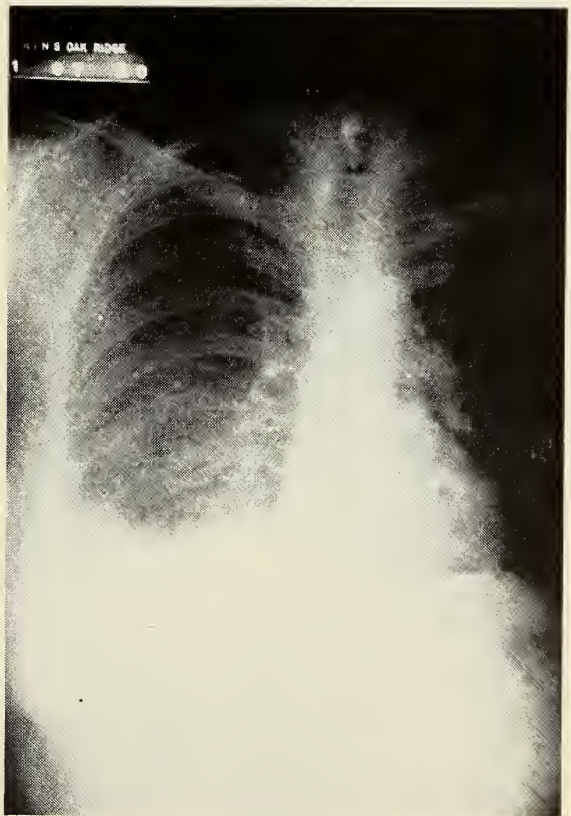


Figure 2-B

per 100 cc. and the specific gravity changed from 1.029 to 1.011. The fluid seemed to change from an exudate to a transudate.

Figure 2 shows x-rays before and after treatments. Marked decrease in fluid is shown. A rather profound pleural thickening is seen on the second film taken seven weeks after treatment.

During the third week of treatment, the patient's W.B.C. went from her normal of 7,100 to 1,300, lymphocytes and monocytes to 73 per cent. Her Hb. fell from 11.2 gms. per cent to 8.6 gms. per cent. Both recovered promptly upon discontinuing the radio gold. The blood changes are interpreted to be radiation effects. Biopsy of cervical lymph nodes shows that 300 times as much gold concentrated in the nodes as surrounding tissue. A high concentration was likewise found in a node mostly replaced by metastatic adenocarcinoma. Figure 3 shows amounts of radio gold in several tissues near to and far removed from site of gold instillation.

A second patient with abdominal carcinomatosis from ovarian serous cystadenocarcinoma presented with ascites limited to her lesser omental cavity. After 200 millicuries of gold <sup>198</sup> colloid instilled in four weekly doses, via polyethylene tubing into her lesser omental cavity, there was a remission of ascites, apparently by perforation with drainage of fluid through gastro colic ligament into the greater peritoneal cavity. Prior to the perforation however, a definite decrease in fluid formed was noted. Exploratory laparotomy with tissue biopsies showed a high gold content of peritoneum of lesser omental cavity and tumor adjacent to that area. Insignificant amounts of gold were found in the peritoneum of the greater cavity. Figure 4 summarizes these data.

A third patient with massive hydrothorax resulting from lymphosarcoma experienced definite remission of fluid from 270 millicuries of radio gold in his thorax. Biopsy of cervical nodes showed that radio gold concentrated in sarcoma involved nodes.

The patients receiving large doses of gold <sup>198</sup> regularly have local pain for 10 to 36 hours. They

frequently are nauseated and vomit for two to three days, with temperatures to 102 and with chills preceding temperature elevations. The compounds used are repeatedly sterile and pyrogen free. Hematological analysis shows bone marrow depression, after intravenous administration of 50-100 mc gold <sup>198</sup>, manifested by diminished W.B.C. and neutropoenia in 10-18 days, dropping Hg. in 20-30 days with reversal when isotope is stopped. The bone marrow biopsies bear out these contentions. Apparently, little bone marrow depression is seen in the average patient receiving intrapleural or peritoneal gold until 200-250 mc is administered.

### Summary

1. Gold <sup>198</sup> colloid is no panacea for treatment or palliation of metastatic neoplasm.
2. Gold <sup>198</sup> does have useful and practical experimental possibilities.
3. Tremendous reticulo endothelial radiation can be obtained by intravenous use of radioactive gold.
4. Palliation of fluid formation in neoplastic ascites and hydrothorax is an important use of radioactive gold.
5. Concentration of therapeutic amounts of radioactive gold in lymph nodes and seemingly in nodes that are histologically totally replaced by tumor is possible.
6. Radioactive gold will damage blood forming organs if not administered with care, under strict supervision.

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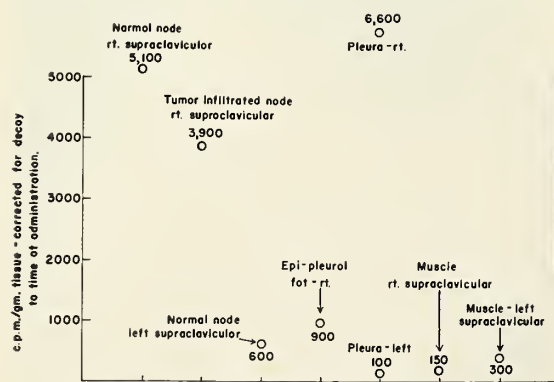


Fig. III. Instillation of 30 mc. Au<sup>198</sup> gold into rt. thorax. Biopsy performed 24 hours later. Data corrected for decay to time of administration.

Figure 3

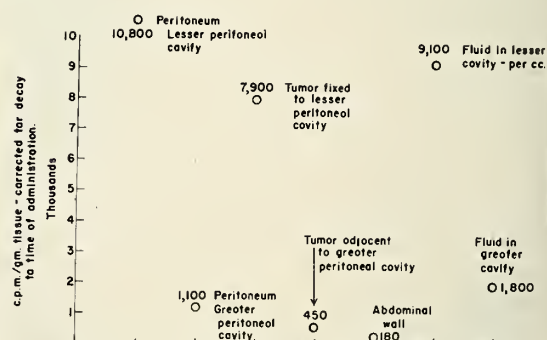


Fig. IV. E. R. - Patient with carcinomatosis of greater and lesser peritoneal cavities with lesser peritoneal ascites. Biopsy studies 6 days after instillation of Au<sup>198</sup> colloid into lesser peritoneal cavity. Corrected for decay to time of administration.

Figure 4



# A Roentgenographic Study of Edentulous Jaws\*

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The fact that edentulous jaws are without anatomical abnormalities is by no means an indication that they are ready for the reception of dentures. Latent infections, unerupted teeth, foreign objects, and fractured roots from previous extractions have been found in jaws otherwise thought to be normal. The necessity for subsequent correction of these conditions is sufficient to warrant a roentgenographic examination of all edentulous jaws previous to denture construction.

## Purpose and Method of Study

This study was undertaken to determine to what extent apparently normal edentulous jaws are involved with unerupted teeth, fractured roots, foreign bodies, and residual infection.

The jaws selected for study were possessed of normal mucosa, without evidence of pathologic involvement. If fractured roots were visible through the mucosa, or if a single erupted tooth was present, the patient was excluded from the survey. For the purpose of this study the upper jaw, which consists of the right and left maxillae, will be considered as one bone and referred to as the maxilla.

A total of 1,050 individuals was studied representing two groups of patients. Group A consisted of 800 patients, 362 males and 438 females, with both jaws edentulous. Group B represented 250 patients, 106 males and 144 females, with either the maxilla or mandible edentulous, the other jaw being partly or wholly dentate. In 78 of the 106 male patients in Group B the maxilla was edentulous; in 28, the mandible. In 96 of the 144 females of Group B the maxilla was edentulous; in 48, the mandible. In the 1,050 individuals studied, the age range was from 18 to 78 years. The average age was 49.2.

Complete intraoral roentgenographic surveys were made of all edentulous jaws. Examination was directed toward the presence of unerupted teeth, fractured roots, foreign bodies, and pathologic areas. In all, 1,850 jaws were examined—974 maxillae and 876 mandibles.

## Results of Study

Of the 1,050 individuals studied, 677 (64.5 per cent) had jaws that were negative. In the remaining 373 patients these findings were recorded:

*Unerupted teeth.* Thirty-five patients (3.3 per cent) had 44 unerupted teeth present, 33 in the

maxilla and 11 in the mandible. The maxillary third molar was found in greatest number, 12 on the right side and 11 on the left. The mandibular third molar was next in frequency, seven on the right side and three on the left. The maxillary canine was found in six instances, three on each side. One mandibular canine was found on the right side. Four supernumerary teeth were found in the maxilla, two at the anterior palatine foramen and two at the left first molar region.

*Fractured roots.* Two hundred seventy-four patients (26 per cent) had a total of 392 fractured roots remaining in the jaws, 254 in upper jaws and 138 in lower jaws. Approximately two-thirds of the fractured roots were found in the maxilla, especially in the first premolar and first and second molar regions. Deducting the 40 unerupted third molars and canines from the total number of teeth originally in the 1,850 jaws, the 392 fractured roots represent the failure (1.3 per cent) from the removal of 29,560 teeth.

In three male patients the root of a maxillary first molar was found within the maxillary sinus. In one male patient a root of a deciduous molar was found in the right mandible.

*Foreign bodies.* Metallic foreign bodies were found in the jaws. In 28 mandibles fragments of amalgam fillings were found within the jaw in the premolar and molar regions. A portion of a dental bur was found in the upper jaw of one patient; a tip of an elevator in another maxilla. In one maxilla a portion of a forceps beak was observed, and in one mandible wires at an old fracture site were found.

In one mandible several sections of what appeared to be a broken hypodermic needle were found overlying the alveolar ridge of the right molar region. On questioning the patient it was learned that a year previously he had had a carcinoma of the mucosa of the right mandibular third molar region, and the metallic fragments visible in the roentgenogram were from radon seeds that had been implanted for the control of the malignancy.

*Pathologic areas.* Nine patients (0.9 per cent) had median anterior maxillary cysts. Thirteen patients (1.2 per cent) had radicular cysts. Forty-one individuals (3.9 per cent) had areas of residual infection remaining from dental extractions.

(Continued on Page 298)

\*From the University of Kansas Medical Center.

## PRESIDENT'S PAGE

Dear Doctor:

The heretic poison of "Something for Nothing" demands consideration as does a philosophy which is based upon the assumption that it is fundamentally sound to strengthen the weak by weakening the strong.

I hope that each delegate has reported to his society the positive action the House ordered at its last session regarding dignity, honor, ethics and public relations. In this connection your president is proud of this mandate for it approved his proposals presented Tuesday evening to the House of Delegates. I shall continuously seek these ends.

I beg each doctor, his wife and medical assistant to jointly encourage our allied associates of dentistry, hospital administrators, pharmacy, veterinary medicine and sanitary engineers to participate in an obligation which is certainly a joint matter.

Let us all be constantly aware that only as a team will we singly or jointly be able to effectively execute the charge. It is imperative this union recover and hold political and social sanity and use as its sole weapons sanity of judgment, sanity of balance and proportions.

To assure a positive and beneficial conclusion there is only one need; each doctor personally underwrite the heroic pursuits and accomplishment of medicine and accurately assist his local system of distribution, the press and radio, in carrying a message of facts to your local public. This is progress!

Your House of Delegates expressed their determination to administer equity by ordering your president to prepare machinery labeled to produce adjustments in unethical and unprofessional conduct of our members when serving the public and the Board of Medical Registration is prepared to exercise their authority. This is evidence of the Society wishing to restore and maintain an orderly house and will, I am sure, convince the public we are sincere in our efforts.

I should like to express my convictions concerning outside assistance in making our state meetings the success that they enjoy.

The exhibitors showed their products and for the patience, cooperation and attitude that they also displayed there is due a large cup of praise. I feel our members do, and rightfully should at all times, display to them an equal courtesy.

The managements of all hotels were, in my opinion, marvelous in every way and they played no small part in making our stay a pleasant one.

To the men and women of the press and radio I wish to say thanks for their every consideration, and feel I can without extravagance say every member of the Society joins me in this voice of appreciation.

Again, in behalf of the Kansas Medical Society, I extend thanks and gratitude to our host, the Shawnee County Society, which was so ably represented by Dr. Don Wakeman and Dr. Harry Davis who, with their able chairmen of various committees, made the 92nd session a complete success.

Always sincerely yours,





## EDITORIAL COMMENT

### Medicine in the V.A.

Dr. Paul B. Magnuson's sudden and dramatic removal from office as chief medical director of the Veterans Administration has created considerable speculation. Dr. Magnuson tells his side of this story in the May 1951 Hospitals magazine. We thought it would be of interest to Kansas physicians and are reprinting excerpts from his own story.

In general, there was a difference of opinion between Dr. Magnuson and Mr. Carl R. Gray, Jr., administrator of the VA, over the line of authority of the medical staff in veterans hospitals. Dr. Magnuson, as a physician, argued that the practice of medicine could not be regulated by inflexible civil service rules and that the line of control going from the administrator to the manager, without reference to the medical director, was wrong. Dr. Magnuson feels this present system, which he cites as representing bureaucratic control, will once again bring back the days when veterans are accepted for hospitalization not for medical but for political reasons.

"I believe that the people of this country want the veterans to have the best medical care available, the best that can be given by the medical profession and other professions. But I do not believe that they want people admitted who do not need hospital care, and pay \$12 a day for that care. I do not believe either, that they want more veterans hospital beds than can be adequately staffed to maintain the standards of medical service to which they are entitled. I do not believe they want to have the construction department specify what shall go into veterans hospitals, how the plans shall be drawn, and where these hospitals shall be built. I believe the American people want these hospitals erected in places where they can be of the greatest service to the greatest number at the least possible expense.

"I offer no apology for anything I did while I was in the Veterans Administration. On the other hand, I do not believe that the administrator understood what he was doing when he permitted the group surrounding him in the central office to lead him into ways which were not medically sound. There is no question that he was interested in the medical department, I think probably to such an extent that he liked to feel that he controlled this great hospital system, the medical care which he admired tremendously. He spent at least half his time traveling from one hospital to another, and dedicating new ones. But he regarded them as buildings. He knew nothing about hospitals or hospital management. He allowed other interested parties to steer him into paths which were, in my opinion,

highly detrimental to the medical department, and which would have resulted—if they have not already resulted—in disruption of the medical service to veterans.

"That is not the purpose for which the United States government and the people of America built these hospitals. They built them so that veterans could have the best medical care available in the world today."

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### Dr. Beelman Leaves Kansas

The Kansas Medical Society deeply regrets the fact that F. C. Beelman, M.D., resigned as director of the Kansas State Board of Health. Dr. Beelman established a truly remarkable record in this state giving its people the benefit of modern health services in the finest American tradition. His work brought him, and the state of Kansas, national recognition in this field. The profession appreciates his services and wishes continued success for him in his new work with the federal Civil Defense Commission.

The following letter from Dr. Beelman will be of interest to all physicians. It again illustrates his interest in public health, his faith in the medical profession, and his zeal for the health of the people.

May 12, 1951

In winding up the business of the old Board of Health I did not want to leave without expressing a word of appreciation to you and the Kansas Medical Society.

Through the many years I have been associated with the Kansas State Board of Health as its secretary and executive officer I am certain I reflect the general feeling of the various members—who have from time to time served on the Board—that we have enjoyed an excellent satisfactory working relationship with the Kansas Medical Society. I want you, as executive secretary of the medical society, and the officers, to know that the Board—and I as the responsible one for carrying on the activities of the Board—deeply appreciate that relationship. In fact, I could not have served had it been otherwise. The fine progress which has been made could only have been accomplished through the wholehearted interest, cooperation and efforts of the medical profession.

I am certain the new Board of Health, which has among its membership five very fine physicians, will want the understanding, sympathy and help of the Society in carrying forward the high ideals and quality of service to the public that has been rendered in the past.

The work and help of the various committees has been of inestimable value in shaping and guiding programs that have made a real contribution in lowering the morbidity and mortality rates within the state of Kansas. Life and health for Kansas' people have been greatly improved because of this fine relationship that is beyond the power of money to purchase for the state.

With all good wishes,

Sincerely yours,

F. C. BEELMAN, M.D.

### Medical Aptitude

Twice a year, in May and November, some thousands of college students throughout the country take the Medical College Admission (aptitude) Test. A rating of less than 500 out of a possible 800 considerably lessens their chances (at best about 1 in 3) of being admitted to medical school.

Few if any schools depend on the results of this test to the exclusion of such other important qualifications as good grades, character recommendations and perhaps personableness. Still, the test counts. It counts especially if one doesn't do well at it. And the average dean probably considers it desirable to find a place for the student who rates a straight 600 or 700.

The test is given by the Educational Testing Service of Princeton, New Jersey, the same organization that recently was about to take over the job of helping Selective Service pick the brains to be deferred from military training. The test is divided into four groups: tests of verbal ability (comprehension of English), quantitative ability (simple mathematics), understanding of modern society and basic science. An English professor, a mathematician, a sociologist or a physical chemist would find the questions in his own field puerile. It is doubtful, however, if an average representative of any of these groups, if over 50 years of age, could be sure of getting even a 500 rating in any field but his own, and it is definitely doubtful that a practicing physician of the same vintage could do well in more than one of the groups, if in any of them.

Here are some sample questions for the curious minded:

A sodium atom and a sodium ion (a) contain the same number of electrons; (b) have identical nuclei; (c) are isotopes; (d) have the same physical properties; or (e) differ in the number of protons they contain. Mark the right answer with the electric pencil, Doctor, and let's see how apt you are at your profession. And how many of you are still able to divide  $4.80 \times 10^{-10}$  by  $5.27 \times 10^{17}$  and get the right

answer? Or perhaps you would like to decide whether splendid, loquacious, cautious, auspicious or adventurous is the best synonym for *audacious*.

If the surgeon to whom you delegate the job of taking out your child's tonsils and the local practitioner who administers your quarterly shot of penicillin are a bit foggy about these matters, why pester the youngsters with a lot of similar teasers?

The answer is, probably, that the lad who does well in the sort of courses that enable him to take such questions in his stride will be more likely to develop into a good physician than the one who elects courses in Romance philology or political science. Possibly it is not the boy or girl who can write a brilliantly spontaneous essay on sociological trends under the Tudors, but the one who is able only to report laboriously the beheadings and chicaneries of the era with names and dates in order, who will be less likely in later years to confuse acute appendicitis with lumbago or a merthiolate reaction with a fungus infection of the skin, or less likely to require twenty years to perceive the practical significance of such phenomena as the inhibitory effect of certain molds on plate colonies of streptococci.

The classes entering medical school in the fall of 1951 will be filled with young men and women who know considerably more about the physical structure of the universe than their fathers. If their perspicacity, judgment and honesty are no worse, there may be a good future in store.—*The New England Journal of Medicine*, May 17, 1951.

### Another E.M.I.C.?

Increasing clamor from the Children's Bureau and Federal Security Agency for the reactivation of the E.M.I.C. program is beginning to reach the ears of Congress. Senator Humphrey of Minnesota has already introduced Senate Bill 1245 which again provides federal grants to state health agencies for defraying costs of maternity and infant care of the families of enlisted men. The newly proposed federal bill is very similar to the program operating during World War II.

The May 1951 issue of *Hospitals* has an article on this subject in which most of the discussion is quite naturally devoted to the cost formula, the basis of hospital reimbursement. The World War II payment procedure had a few minor inequities, but was objected to primarily on the grounds of the rigidity of a national formula. On the basis of that experience, and following a suggestion of Walter Reuther, president of the U.A.W.-C.I.O., the hospital association recommends a new procedure.

Federal grants covering E.M.I.C. expenditures will be given to the various state health departments. The



previously tested cost formula will be pretty much adhered to, but hospitals propose to contract through the local Blue Cross for payment instead of directly with the federal government. It is argued that Blue Cross formulas are more flexible and that the actual working conditions of hospitals are better understood by the local Blue Cross than by a federal agency.

If the federal government is to provide hospital and medical benefits for the dependents of servicemen, it might well consider the purchase of a hospital and medical care contract similar to that now available to automobile and steel workers. Such a contract could be available to military personnel of higher pay grades on a part-time or fulltime payment basis. Such a contract would minimize use of military hospitals, offer excellent protection for dependents in home communities, and permit selection of the desired type of care by dependents located near military installations.

The physician could also make a suggestion regarding the 1951 E.M.I.C., should a new program be started. He was not completely happy during World War II with the many regulations and reports and always felt that an unnecessarily large portion of the total grant went for administrative costs. This is vigorously denied by the Federal Security Administration, but when the total persons served is divided into the total grant, medical payments represent a small portion of that figure. The average physician might approve Walter Reuther's suggestion of local bargaining with Blue Shield, but under such a plan there would also be problems of inequalities in fee schedules, variations between different Blue Shield corporations, and a great many other things.

The physician would prefer to have the enlisted man's child added as a dependent during the gestation period. This rate is understood to be \$30 per month for the first child and \$20 for each subsequent child. If this figure were not sufficient, it would be simple for the fiscal agencies of the armed forces to add a grant to the serviceman's wife on the basis of a letter from the physician. Such practice would result in having women come to the physician's office earlier during pregnancies. The money would be given directly to the family, and the physician would take his chances on being paid for his services. This proposal eliminates the establishment of complicated and expensive administrative offices because it utilizes channels already functioning. It provides an incentive for earlier medical care which would be of direct benefit to the serviceman's wife. It would give her the responsibility of paying her own bills, and it preserves the American system of free enterprise and free choice of physician with

reference to the E.M.I.C. program.

Such a plan appears to be logical, and therefore undoubtedly will not meet with favor from the Federal Security Administration. It appears to be economical, and therefore certainly will not be approved by Congress. And since the only risk involved is to the physician himself, who is perfectly willing to assume this risk, it will certainly be opposed by the Children's Bureau on the basis of being unfair.

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## SOCIALIZED MEDICINE

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*Editor's Note. This is the 19th of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

### Shall Party Politicians Run Our Schools?

The following is a summary of an article by Dr. John W. Studebaker that appeared in the American School Board Journal, February, 1951. A reprint was obtained through the National Educational Campaign of the American Medical Association.

For 14 years Dr. Studebaker was United States Commissioner of Education, until 1948 when he suddenly resigned over disagreement with Oscar Ewing. After three years silence Dr. Studebaker now publishes this article to explain what was happening to education under the direction of the Federal Security Administration.

"To most of us it is unthinkable that our schools should follow the line of *any* party. But it can happen here. . . . Whenever party politicians—no matter what their party—can control education, our whole, free, democratic school system is in great danger. And that is the direction toward which events in Washington have been moving. . . .

"I believe that the federal government has a responsibility in the field of education, and that it can, and should do more than it has done to help the states and local communities maintain good schools. But I emphatically do not think that partisan politicians should run our schools, directly or indirectly.

"And in the past two or three years, partisan politicians have moved in on education, at the federal level, as no political officials have ever done before. . . .

"Today, nothing is allowed to come out of the Office of Education—no speech, no bulletin, *no technical educational publication, even*—without the

approval of political higher-ups. As Federal Security Administrator, Oscar R. Ewing is the principal person exerting this supervisory power. . . He wants the Federal Security Agency, in which the Office of Education has been lumped with Welfare and Public Health, converted into a new Department of Welfare, with cabinet status. Obviously this would make its political strength even more definite and powerful. It would intensify the danger that already exists of far-reaching and sinister effects on education; and extend them right down through our public school system in the states and local communities, and perhaps through the private schools also.

"Picture a Secretary of Welfare—or whatever he might be called—with billions of dollars of federal funds to distribute among the states. Naturally—and no matter what party is in power—this powerful department would have a 'unified' program of administration, and the funds at its disposal would be an effective persuader to bring the states into line. . .

"Out goes the independent school board. In comes a politically appointed Director of Welfare to run the schools along with the health department and the welfare department—parceling out their funds from one 'unified' pot. Most of these funds would be parceled out to the Director of Welfare, in turn, by partisan-minded officials at the state and federal levels. . .

"What chance has freedom to survive under such a scheme? About as much chance as an honest football team has to win when the referee has a bet on the opposing eleven."

Dr. Studebaker reviewed the work of the Department of Education throughout the Roosevelt era, during which time the department was non-partisan and politically uncontrolled.

"Mr. Ewing disliked the idea that the Federal Security Agency should be a sort of holding company made up of the relatively autonomous and very different functions of education, health, and welfare. He felt and said that his predecessors had been ineffective. He wanted to run an operating agency. So when he became administrator, he started to operate. The education bureau of the agency, by his edict, ceased being the United States Office of Education and became the Federal Security Agency's Office of Education. The marvelous library on education—a specialized tool of vital importance to the kind of work done by the Office of Education, again by his edict—was merged into a general library for the whole 'welfare' agency. Several Office of Education employees engaged in editorial and other work related to publications were abruptly transferred into a central information office under the direct control of the Administrator.

"Integration.' 'Co-ordination.' 'Streamlining.' Those were the catchwords. Presumably they implied greater efficiency and economy. But they actually meant piling a ponderous, expensive layer of personnel into the 'top side' of the agency to supervise and control the four weakened operating units of the agency, one of which is the United States Office of Education. In 1948, the administrator's central staff included 23 top-level jobs at salaries of \$9,000 to \$12,000, plus many dozens of administrative and clerical assistants.

"Far from relaxing the wartime controls, the administrator 'clarified' the clearance policy. Henceforth, press releases, technical publications, and all other printed material required approval of the central staff. Members of the administrator's staff began telling us what we should and should not say—particularly in the program called 'Teaching Zeal for American Democracy.' One of the specialists in secondary education prepared a speech stressing the importance of teaching the nature of communism. He was to speak at a meeting of high school principals in Massachusetts. He ran into so much trouble getting the speech approved that he spoke extemporaneously, off the record. I made a speech at the University of California, in which I said that no communist was fit to teach the American way of life in any school. I forgot to get it cleared. A California senator had it printed in the Congressional Record and I put through a requisition for enough reprints—cost about \$250—to supply superintendents of schools, colleges, and high schools. The requisition was held up for days while a member of the administrator's staff argued that I should not make such statements because of the 'bad reaction' they might have, whatever that meant. And in other ways the influence of a political partisan in the driver's seat was making itself felt in the detailed operations of the Office of Education, utilizing the 'streamlined' mechanism and the powerful central staff of the administrator. Mr. Ewing was indeed operating.

"Perhaps no one of these episodes was of any great importance in itself. But they were symptomatic of a disturbing insistence by political-minded officials on injecting their views, which could hardly be said to be politically unbiased, into educational policies and programs. I resigned in 1948, relieving myself of further pressures to yield the control of education to partisans. But there is immeasurably more at stake than any one man's satisfaction or peace of mind."

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Make plans now to attend the 93rd annual session of the Kansas Medical Society, Kansas City, April 27-May 1, 1952.



## 92nd Annual Session, Kansas Medical Society

Although bad weather and flood conditions in some parts of the state cut down on attendance at the 92nd annual session of the Kansas Medical Society, a most successful meeting was held in Topeka, May 14 through May 17. Registrations were as follows: members of the Kansas Medical Society, 543; guests (residents, laboratory technicians, students, etc.), 185; members of the Woman's Auxiliary to the Kansas Medical Society, 192; members of the Kansas Medical Assistants' Society, 182; total, 1,102.

The first day of the meeting was given over to sports events, a golf tournament being held at White Lakes Country Club and a trapshoot at the Topeka Gun Club. The scientific program began Tuesday morning and continued through Thursday, with special sessions for eye, ear, nose and throat specialists on Tuesday and Wednesday.

The annual banquet at the Topeka High School Cafeteria was the big social event of the meeting. The speaker of the evening was Mr. Robert Friars of Evanston, Illinois, professional photographer, who showed a colored movie, "Holiday in France." Music was provided by the Strolling Troubadours of Kansas City. At the close of the evening's program the retiring president, Dr. F. R. Croson, administered an oath of office to the incoming president, Dr. C. H. Benage, who responded briefly and presented an engraved past president's key to Dr. Croson.

Two meetings of the House of Delegates, reported elsewhere in this issue, were held during the session.

### Officers for 1951-1952

Dr. C. H. Benage, Pittsburg, now serving as president of the Kansas Medical Society, will be assisted during the year by the following officers elected on May 17: president-elect, Dr. Warren F. Bernstorff, Winfield; first vice president, Dr. Lucien R. Pyle, Topeka; second vice president, Dr. Murray C. Eddy, Hays; constitutional secretary, Dr. Dale D. Vermillion, Goodland; treasurer, Dr. J. L. Lattimore, Topeka; delegate to the American Medical Association, 1952-1954, Dr. John M. Porter, Concordia; alternate, Dr. Peter E. Hiebert, Kansas City. Not elected at this session but holding over in office are Dr. L. S. Nelson, Salina, delegate to the American Medical Association, 1951-1953, and Dr. George Gsell, Wichita, alternate.

### Councilors for 1951-1952

New councilors were elected for Districts 1, 2, 7, and 8. The complete list of those now serving, with the date of expiration of their terms, is as follows:

1. Dr. W. L. Anderson, Atchison, 1954
2. Dr. H. P. Jones, Lawrence, 1954
3. Dr. J. G. Hughbanks, Independence, 1952
4. Dr. F. C. Taggart, Topeka, 1953
5. Dr. L. J. Beyer, Lyons, 1953
6. Dr. J. V. Van Cleve, Wichita, 1952
7. Dr. S. A. Anderson, Clay Center, 1954
8. Dr. A. E. Rueb, Salina, 1954
9. Dr. M. J. Renner, Goodland, 1953
10. Dr. M. C. Eddy, Hays, 1952
11. Dr. C. V. Black, Pratt, 1953
12. Dr. R. G. Klein, Dodge City, 1952

### Nominating Committee

The committee which will make nominations for offices before the 1952 meeting of the Society is composed of the following: Dr. J. H. A. Peck, St. Francis, chairman; Dr. J. L. Lattimore, Topeka; Dr. L. S. Nelson, Salina; Dr. O. W. Davidson, Kansas City; Dr. H. N. Tihen, Wichita.

### Editorial Board

Two members of the Editorial Board of the Journal of the Kansas Medical Society, Dr. Lucien R. Pyle, editor, and Dr. Dwight Lawson, were re-appointed by the Council at a meeting held on May 17. Others serving on the Board are Dr. John W. Cavanaugh, Dr. Orville R. Clark, and Dr. Richard Greer. All are Topeka physicians.

### Official Proceedings, First Session, House of Delegates May 15, 1951

Ninety-one voting members were present at the start of the first House of Delegates meeting of the 92nd annual session, held at the Jayhawk Hotel, Topeka, May 15, 1951.

Reports of official activities of the year were presented, and all that required action by the House of Delegates were approved. Those who gave reports at the meeting are as follows: Dr. Donald P. Trees, Wichita, for councilors and committee chairmen; Dr. Clyde W. Miller, Wichita, for the Committee on Necrology; Dr. Lucien R. Pyle, Topeka, for the Editorial Board of the Journal of the Kansas Medical Society and for the Kansas Volunteer Advisory Committee to Selective Service; Mr. Oliver E. Ebel, Topeka, executive secretary; Dr. Dale D. Vermillion, Goodland, constitutional secretary; Dr. John L. Lattimore, Topeka, treasurer; Dr. John M. Porter, Concordia, senior delegate to the American Medical Association; Dr. F. R. Croson, Clay Center, president; Dr. C. H. Benage, Pittsburg, president-elect; Mrs. John A. Billingsley, Kansas City, and Mrs. Leo J.

Schaefer, Salina, for the Woman's Auxiliary to the Kansas Medical Society; Mr. Kirke W. Dale, Arkansas City, attorney for the Kansas Medical Society; Dr. O. W. Davidson, Kansas City, secretary of the Kansas State Board of Medical Registration and Examination; Dr. E. F. Steichen, Lenora, for the Northwest Kansas Medical Society.

There was a brief discussion of the 1951 legislative session.

The executive secretary reported on indigent medical care in Kansas, and the House of Delegates voted that a study of the matter be conducted by the proper committee.

A number of resolutions were introduced, the House approving them for discussion and action at its second meeting.

**Official Proceedings, Second Session, House of Delegates  
May 17, 1951**

The second session of the House of Delegates of the 92nd annual meeting of the Kansas Medical Society was held at the Jayhawk Hotel, Topeka, May 17, 1951, with 90 voting members in attendance.

A resolution instructing the delegates from the Kansas Medical Society to the American Medical Association to vote for the abolishment of the fellowship category in the A.M.A. was approved.

Next item discussed was a resolution introduced at the Tuesday session recommending that control of professional standards in hospitals be vested in the American Medical Association, and that resolution also was approved.

Dr. A. W. Fegty, Wichita, discussed several amendments to the Constitution and By-Laws of the Kansas Medical Society and explained that the purpose of the action was to raise the standing of several special committees to the level of standing committees, those groups being the Committee on Mental Health, the Committee on Medical Assistants' Society, the Committee on Blue Shield Relations, the Committee on Rural Health, and the Committee on Blue Shield Fees. He suggested also that the name of the Committee on Conservation of Hearing be changed to the Committee on Conservation of Hearing and Speech. The amendments were approved and Dr. Fegty was asked to prepare appropriate paragraphs to describe the duties of those committees.

A resolution proposing that members of the Society other than past presidents be included on the Nominating Committee, with one representative elected from each councilor district, that representative to be someone other than the councilor from that district, did not carry.

A resolution providing that new resolutions presented to the House of Delegates be published in the Journal of the Kansas Medical Society in the

issue immediately preceding the state meeting was amended to include the words "whenever possible." The House voted to table the suggestion.

A request by Dr. O. W. Davidson, Kansas City, secretary of the Kansas State Board of Medical Registration and Examination, to introduce an item of new business was approved by the required two-thirds majority vote. Dr. Davidson asked that the Council appoint a special committee or empower one of its standing committees to study information received by the Kansas State Board of Medical Registration and Examination and the executive office of the Kansas Medical Society concerning unethical or unprofessional conduct of medical licensees in Kansas and to report its findings to the board. The request was approved by the House.

A motion that the oath of office written by Dr. F. R. Croson, Clay Center, and administered by him to the incoming president, Dr. C. H. Benage, Pittsburg, be adopted as the official oath of office of the Kansas Medical Society, carried unanimously. The wording of the oath is as follows:

"I,....., do hereby promise and swear that, during my term as president of the Kansas Medical Society, I will support the constitution of the United States of America, the constitution and by-laws of the American Medical Association, and the constitution and by-laws of the Kansas Medical Society. I hereby promise that I will, to the extent of my ability, work at all times for the progress of the Society and for the health, welfare and happiness of all the people of Kansas. So help me God."

A vote of confidence was extended to Dr. John L. Lattimore, Topeka, a member of the Kansas House of Representatives, and the physicians who worked with him during the 1951 session of the Kansas legislature.

The House approved a motion by Dr. Floyd C. Taggart, Topeka, providing that the Society expend every possible effort to make a basic science examination mandatory for all who practice the healing arts in this state. A second motion, that the Society take no part in conferences and compromises with representatives of cults or practitioners of the healing arts outside the field of medicine with reference to future legislation, also carried.

The meeting closed with the election of officers, reported elsewhere in this issue, and the installation of the new president.

**President's Address**

You, the titular body, the representatives of some 1,700 members of the greatest of all professions, are witnessing quite a transition in your organization.

You are presently seeing the custody of this great



Society being removed from one who has demonstrated proof of leadership, proof of judgment, proof of understanding, and integrity.

Simultaneously, you are seeing the custody being invested in one who has yet to show proof of any one of the above qualifications. To be sure, such exchange is not without hazard for the future. But for the past year, there is pride and satisfaction.

Let us offer our mutual approbation and gratitude for Roy Croson's unselfish promotion of Kansas medicine by giving him a standing vote of thanks!

My friends and fellow associates, I ask your indulgence in a brief resume of the circumstances which today are dictating to us; this request of indulgence is made without presumption that I have any special knowledge or skill of analysis in this direction, but requested only in the hope that such fundamental recognition may give rise to some accomplishments in the coming year.

Now, what are these circumstances and wherefrom did they arise?

Second—How must we set about to correct any one or all of the errors so we can restore a normal harmonic progression?

The problems each of us face daily are common to us all, but let us establish a base by saying that the medical profession with its ethics, dignity and achievements is allegedly being threatened. Then ask ourselves, may such challenge or threat not be due to altruistic tradition in exclusion of far too many social, political and economic changes current with present times?

The thinking of people today seems opposed to that of yesterday. A different type of thinking embraces our social changes; it is closely allied with a paternalism which seems in part at least to have replaced the *pride, determination and stern qualities* of our *forebearers*. The sincere reverence, the abiding trust and almost holy faith accorded our profession a generation ago seems again, in part, to be replaced by our present machine age.

Many view us with prejudice, many envy our small holdings of worldly goods, many look upon us as only injectors of penicillin, theelin and various vitamins. We're feared for the scientific knowledge we might possess, we're accused of unreasonable charges and monopolistic behaviour. Then, finally, political pressure which is being applied in an all out effort is designed to create fantastic promises that will cause further incentives for the public to continue its acceptance of cultist worship and disfavor of facts and abandonment of idealism. So medicine is caught in a period of revolution and there is little difficulty in light of present promises to see why and how we're being confused, distrusted and criticized by some groups of people!

I should like to call attention to the fact that in spite of some opinions things aren't as usual *today* but we of medicine are as usual—making daily decisions in the interests of the public's health. Let us not be lulled and overlook that the public, too, is under tremendous pressure, almost a breaking tension and operating on mass production. Our decisions must be geared to adequately consider all circumstances.

One of the significant circumstances is that a new philosophy has been woven into the fabric of society and its maintenance or its substitution depends as usual upon us for its health phase, and if we are to have the fruit from the tree of Hippocrates survive and mature, we must see to it that nourishment in abundance be given the roots of this medical vegetation. Each and every doctor must make his contribution, for well do we realize each doctor is an independent business man, buying wholesale from the factory of knowledge and selling retail to the patient consumer. Each of us alone is responsible for our operations; yet no one should ignore his or her capacity to properly or improperly serve society; thus, at will, causing credit or discredit to his organization as a whole. I beg of you, *please* give this fact your sincere consideration before you elect to weaken the chain of which *you* are *one* big link! No one is to tell you how, upon what terms, what price and under what conditions you are to sell your products, yet it behooves us to exercise reason.

It is, however, true that we operate under a franchise given us by law, administered by our Board of Medical Registration, yet steps to adjust grievances are not taken without due regard to equity. So again I appeal to you to so act that you do not enlist in the black market of medicine. Furthermore, let me remind you, that *all* national preferences, be it refrigerators, television, automobiles, shoes or health, cannot be maintained in the absence of sales advice and information. This must be recognized and steps taken to qualify for preference (that is—if we still want it).

Our sales advice and distribution system is one and the same and each of us must be the salesman-ager, and when the procedure is crystalized it shall then be given to our public relations department for distribution to the public. Then and only then are we stationed for competition. The competitive fields today recognize for time only those that can stand the insults of Time itself, so in other words we must have our entire sales force operating upon the highest plane of ethics, dignity and honor! Medicine and its allies must adjust any differences that are present; then and only then can each contribute to the health of society, and if each group is making its respective contribution, we can assume we are united

in cause and effect. To this end, I pledge this body all effort shall be made.

I feel it is the hope, the aim and united expression of each and every Kansas member that he can be able to retain public approval, his self-respect and the right to serve his fellow man on a voluntary basis.

I feel further that it is incumbent upon each of us to teach the public the history, the heroic pursuits and sacrifices of medicine, and show them the facts of medical progress which have made their very existence possible.

I realize this teaching alone is very much short of total solution, even if each of us discharges his obligations properly. These people need more than a simple lecture; so I propose to secure a cross section of thinking by inviting groups of labor, groups of business men, groups of industrialists, groups of farmers, press, radio and political leaders to discuss with me in your behalf our public status.

I then propose to present the results obtained from the interviews to the Council for consideration and definite action, designed to inform those who lack understanding and correct the thinking of those whose understanding is inaccurate.

I propose to assist in the establishment of a strong, yet flexible, civil defense program.

I propose to delegate the task of examining the medical records on indigent care, for today, with paternalism a favorite, indigent care has grown to be a sizable institution and it is alleged the cost of medical care equals one-half the sum of all other indigent costs.

I believe the Society should at least offer its assistance and support to all official and voluntary health agencies that contribute to the public's health operating within the state, and especially to the newly formed Board of Health.

The relationship of rural health under Dr. Peck and the medical school under the leadership of Dean Murphy deserves our united and unfaltering support.

Blue Shield-Blue Cross is worthy of our expenditure of energy to the fullest and without any periods of remissions. This is our means of answering health by compulsion.

I shall attempt a means by which we can have closer working relations between our central office and respective constituent societies.

I propose an operating control of society funds, be this per budget previously arranged or per quarterly control with such reports being made to this body and any member who requests it.

I shall encourage all committees to constantly keep in mind our present position with the legislative bodies and furthermore to plan sufficiently far

ahead so that at the next session we might be able to make further progress.

I pledge to the medical assistants our continued support and our solicitation of their ever-increasing aid; also to attempt to have their annual meeting not in conflict with Mother's Day.

For the wives and our children's mothers, who have possibly the keenest insight of us all and who have banded themselves together under the banner of the Medical Auxiliary, I feel each of you joins me in offering congratulations and best wishes for their future.

I feel it is obligatory that we sanction our parent organization and especially in providing the necessary financial support. In this connection, I am proud to report that 86-88 per cent of our membership have now discharged their A.M.A. financial obligation.

I pledge each of you that any new ideas, new policies, or new committees you might feel to be beneficial to the Society will be welcomed and considered.

I propose to investigate the so-called "high" medical cost, by securing a breakdown of hospital and drug costs and medico-surgical costs.

The State High School Athletic Association and medical care fees need attention, as do the relations now existing between the two bodies. I pledge you we shall seek improvement.

I shall encourage the provision of more beds in Southeast Kansas designated for the treatment of tuberculosis.

In conclusion, I pledge to you that I shall at all times exercise with all the vigor I possess efforts designed to manifest unity, thus gaining strength by which we can properly carry our message to the public.

I pledge to at all times seek an intelligent approach to any problem that arises. I give to you my belief, that by collective efforts we shall recover for ourselves that full respect, honor and position which has long and rightfully been ours—THE CONFIDANT OF MANKIND!

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#### Report of Journal Editor

Your Editorial Board, composed of Dr. John W. Cavanaugh, Dr. Orville R. Clark, Dr. Richard Greer, Dr. Dwight Lawson and Dr. Lucien R. Pyle, with Dr. Glen R. Shepherd and Dr. Donald P. Trees as associate editors, submits the following report for your consideration.

The board has been particularly pleased this year with the quality of the scientific articles submitted for publication. As a whole, the articles have re-



quired a minimum of editing, and have been definite contributions to medical literature. We solicit worthwhile articles for future publication.

There have been few changes in the make-up of the Journal in 1950-1951 as compared to 1949-1950. However, the board has unanimously voted to introduce two new sections next year, providing these two sections meet with your approval.

Number 1. Each year each member of the senior class of the University of Kansas School of Medicine writes a senior thesis on some medical subject and includes a comprehensive review of the literature upon that subject. The medical school faculty will select what they consider to be the 15 best manuscripts and submit them to the Editorial Board. The board will then select and publish the 11 articles they feel are of most value to the physicians of Kansas, one article appearing in each issue except the April issue, which is the annual program number.

Number 2. It is the opinion of many of the members of the Kansas Medical Society that there are many physicians in Kansas who have made great contributions to their communities, medically, socially, politically, and individually. The contributions of many of these individuals are totally unknown to the greater numbers of our membership. And in order to do honor to these men, in a small way, and while they are still alive, the following idea for a new section is proposed. There are 12 councilor districts in the organization of the Kansas Medical Society. We propose that the delegates and the councilor from each district select, and collect the pertinent facts about, a doctor in their district that they feel most worthy of this honor, and submit this material to us by October of each year. The articles may be written in form for publication, or some member of the editorial staff will prepare them from the material submitted. One article will then appear in each issue, beginning with the January issue.

The financial picture of the Journal this year is not quite so bright as in previous years, and we will have to call upon the Kansas Medical Society for most, if not all, the authorized sum of \$3,000. However, due to advice from our paper salesman last November, we placed an order for six months paper stock for future deliveries. The day after the order was placed paper advanced in price, and we thereby saved the Society some money. We now have on hand sufficient paper stock to print six or seven issues, and this will reflect on our next year's financial report. It is within the ability of the board to reduce somewhat the yearly expenditures for putting out the Journal, which this year amounted to \$17,349.69. However, this will mean a decrease in

the size of the Journal, printing three scientific articles oftentimes instead of four, reduction of the number of copies sent to senior medical students, libraries, etc., and curtailment of the previously proposed new section in the Journal. If such is the desire of this body, the board will comply.

We, of the Editorial Board, take this opportunity to publicly express our appreciation and thanks to Miss Pauline Farrell, the managing editor, for a job well done, also to Mr. Oliver E. Ebel for his unflinching interest in the Journal of the Kansas Medical Society and for his many worthwhile contributions to its pages.

We cannot fail to express our appreciation to those who have advertised in the Journal. It is they who have invested almost \$15,000, without which the Journal in its present form would not be possible. It is our hope that their investment has paid and will continue to pay good dividends.

As editor of the Journal of the Kansas Medical Society, I wish to express my sincere appreciation to each and every one who has helped make our Journal a better publication—the authors of scientific articles, the advertisers, and all members of our editorial staff who have given freely of their time and talent.

\* \* \*

#### Blue Shield Elects Officers

A meeting of the board of trustees of the Blue Shield, Kansas Physicians' Service, was held in Topeka on May 13. The following officers were elected: president, Dr. Dwight Lawson, Topeka; vice president, Dr. Henry S. Blake, Topeka; executive vice president, Dr. L. W. Reynolds, Hays; secretary-treasurer, Dr. John A. Holmes, Lawrence.

Each councilor district is entitled to have one trustee on the board, and the following are now serving: 1, Dr. Conrad M. Barnes, Seneca; 2, Dr. John A. Holmes, Lawrence; 3, Dr. C. H. Benage, Pittsburg; 4, Dr. Francis T. Collins, Topeka; 5, Dr. John L. Grove, Newton; 6, Dr. A. L. Ashmore, Wichita; 7, Dr. L. E. Filkin, Concordia; 8, Dr. C. V. Minnick, Junction City; 9, Dr. George D. Marshall, Colby; 10, Dr. Millard E. Schulz, Russell; 11, Dr. J. A. Blount, Larned; 12, Dr. M. F. Frederick, Hugo-ton.

The president and the present-elect of the Kansas Medical Society, Dr. C. H. Benage of Pittsburg and Dr. Warren F. Bernstorff of Winfield, are automatically on the board because of the positions they hold. Mr. Orville C. Hollis of Burttton, chairman of the state members' committee, serves also, as do two laymen appointed by the governor, Mr. Ellis D. Bever of Wichita and Mr. Martin F. Trued of Topeka.

The executive committee is composed of the

president, vice president, executive vice president, secretary-treasurer, immediate past-president, and one member appointed from the board by the president. Dr. A. L. Ashmore, Wichita, has been appointed for this year.

\* \* \*

#### EENT Group Names Officers

The organization of eye, ear, nose and throat specialists in Kansas elected Dr. Will D. Pitman, Pratt, its president for the coming year at a business session held during the annual meeting of the Kansas Medical Society. Dr. Dale D. Vermillion, Goodland, was named president-elect, and Dr. George F. Gsell, Wichita, was chosen to serve as secretary.

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#### Kansas Society of Pathologists Meets

A breakfast meeting of the Kansas Society of Pathologists was held at the Jayhawk Hotel, Topeka, on May 16. The following officers were chosen for the coming year: president, Dr. Bert S. Stofer, Wichita; vice president, Dr. A. A. Fink, Topeka; secretary, Dr. William P. Callahan, Jr., Wichita. Tentative plans were made for a fall meeting to be held in Chicago in conjunction with the meeting of the College of American Pathologists and the American Society of Clinical Pathologists.

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#### Anesthesiologists Hold Meeting

The annual meeting of the Kansas Society of Anesthesiologists was held in Topeka during the Kansas Medical Society session last month. There was a discussion of Blue Shield fees, after which the group considered the possibility of founding an anesthesia study commission in Kansas. It was announced that Dr. Paul H. Lorhan will send members of the group a monthly bulletin containing abstracts from current literature on anesthesia, discussion of difficult cases, and news items.

Dr. Edgar M. Sutton, Salina, was named president of the group, and Dr. W. O. Martin, Topeka, was elected vice president. The secretary, Dr. Harold F. Spencer of Emporia, and the treasurer, Dr. Ray T. Parmley, Wichita, were re-elected.

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#### Academy of General Practice Meets

The annual meeting of the Kansas Academy of General Practice was held in Wichita in April. Dr. George L. Thorpe, Wichita, took office as president, and the following additional officers were elected: president-elect, Dr. Albert C. Harms, Kansas City; vice president, Dr. George E. Burket, Jr., Kingman; secretary-treasurer, Dr. Clovis W. Bowen, Topeka. The 1952 meeting of the organization will be held in the Town House, Kansas City, Kansas.

#### Kansas Radiological Society Meets

A dinner meeting of the Kansas Radiological Society was held at the Jayhawk Hotel on May 15. Officers of the group are Dr. Leland Glaser, Hutchinson, president; Dr. Willis L. Beller, Topeka, vice president, and Dr. Charles White, Wichita, secretary-treasurer.

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#### Sports Events at Annual Session

A golf tournament at White Lakes Country Club and a trap and skeet shoot at the Topeka Gun Club were held on Monday, May 14, before the scientific program of the 92nd annual session in Topeka. Prizes were awarded at a tournament banquet at White Lakes Country Club that evening.

Dr. Glen Ashley, Chanute, had low gross score in the championship flight of the golf tournament. Dr. Fred Ford, Topeka, had low net; Dr. James W. Shaw, Wichita, second low gross; Dr. B. J. Ashley, Topeka, second low net.

Winners in the first flight were: Dr. Fred Bosilevac, Kansas City, low gross; Dr. L. E. Knapp, Wichita, low net; Dr. J. V. Van Cleve, Wichita, second low gross; Dr. M. D. Morris, Topeka, second low net.

Second flight: Dr. J. D. Taylor, Norton, low gross; Dr. E. M. Sutton, Salina, low net; Dr. W. L. Pratt, Leavenworth, second low gross; Dr. M. F. Frederick, Hugoton, second low net.

Third flight: Dr. L. C. Joslin, Harper, low gross; Dr. J. A. Blount, Larned, low net; Dr. A. P. Cloyes, El Dorado, second low gross; Dr. W. L. Good, Perry, second low net. A prize for the oldest golfer competing was won by Dr. J. A. McLaughlin, Wichita.

Honors for high trap in the shooting competition were won by Dr. J. L. Jenson, Colby. Other prize winners were: Dr. C. V. Minnick, Junction City, second; Dr. W. A. Smiley, Junction City, third; Dr. Ed Smiley, Junction City, fourth; Dr. George Marshall, Colby, fifth; Dr. George Gill, Sterling, sixth; Dr. Howard Snyder, Winfield, seventh; Dr. J. D. Gough, Chanute, eighth; Dr. M. C. Eddy, Hays, ninth; Dr. F. L. Loveland, Topeka, tenth; Dr. L. F. Eaton, Salina, first tyro.

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#### Medical Assistants Elect Officers

Miss Maxine Williams, Kansas City, was installed as president of the Kansas Medical Assistants' Society at the close of the organization's two-day convention in Topeka, May 13 and 14. Officers chosen to work with her during the coming year are Mrs. Charlotte Parish, Wichita, president-elect; Mrs. Delbert Lacey, Topeka, vice president; Miss Agnes Burns, Kansas City, secretary; Mrs. Luda Bennett, Hutchinson, treasurer.



#### Auxiliary Announces New Officers

Mrs. Mark A. Brawley, Frankfort, was installed as president of the Woman's Auxiliary to the Kansas Medical Society at the annual meeting of the organization in Topeka last month. The following new officers were elected: president-elect, Mrs. Robert E. Pfuetze, Topeka; first vice president, Mrs. G. W. Kirby, Wichita; second vice president, Mrs. I. Joseph Waxse, Oswego; third vice president, Mrs. W. L. Butler, Stafford; recording secretary, Mrs. E. R. Millis, Kansas City; treasurer, Mrs. Richard O'Donnell, Ellsworth; corresponding secretary, Mrs. R. E. Capsey, Centralia.

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## BLUE SHIELD

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### Voluntary Economy Program Recommended

Can the length of the hospital stay of Kansas Blue Cross-Blue Shield members be safely reduced? Are Kansas Blue Cross members receiving any considerable quantity of drugs in excess of their actual medical needs? Are patients pressing doctors for hospital admission which, in the opinion of the physician, is not necessary or even beneficial in the management of the illness?

These questions and many others came before the annual meeting of the Blue Shield Relations Committee of the Kansas Medical Society May 15, in Topeka.

The cost of prepayment of hospital and medical care is going up all over the United States. Some students of the health plans feel that the purposes of prepayment may be defeated if costs are not held down. Those in the low and middle income groups are the very people for whom Blue Cross and Blue Shield were created. But if dues to members rise much beyond the point they are today, it is doubted that the voluntary approach will continue to attract people in the modest income group.

The key to a solution of some of these problems is undoubtedly in the hands of each physician who is the final arbiter as to how the services are used.

These were the considerations which prompted the Blue Shield Relations Committee to recommend that an intensive informational program be directed to the medical profession in Kansas, the hospitals, and the members of Blue Cross and Blue Shield. The purpose of such a program would be to win the cooperation of all concerned in reducing use of the services wherever this could be properly done in the opinion of the attending physician. It was felt by the committee that there are many cases wherein some services are performed which are not really of benefit to the patient. For example, many drug orders in hospitals may be continued beyond the

point necessary in treatment simply because the physician fails to cancel the order. The use of drugs, dressings, and intravenous solutions accounts for over 25 per cent of the total Blue Cross expense. Similarly the doctors on the committee felt that many patients may stay in the hospital beyond the optimum time. Many of these additional days of care may be primarily for the convenience of the patient. If members and doctors both understand that each hospital day adds about \$12 to the expense of Blue Cross, it is reasonable to expect that some of these days may be eliminated. If the average length of stay could be reduced by as little as one-half day, the savings in Blue Cross expense would amount to nearly a half million dollars per year.

The Blue Shield Relations Committee suggested that this program of factual information be carried to all physicians in the state through meetings with county societies, hospital staffs, by publication in the Journal and in all Blue Cross-Blue Shield publications. The Blue Cross-Blue Shield staff made it clear to the Physician Relations Committee that this entire effort would have to be initiated and sponsored by the medical profession itself; that it would not be the intent of the Blue Cross-Blue Shield organization to attempt any kind of regulatory program. The entire plan would be based solely on the willingness of physicians and their patients to cooperate in reducing costs when, in the sole opinion of the attending physician, a particular service is not indicated in the treatment of the patient.

Members of the Blue Cross-Blue Shield staff would welcome invitations to appear before county society and hospital staff meetings for a brief discussion of this developing program.

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### Polio Research Grant

The University of Kansas School of Medicine has received a grant of \$92,510 from the National Foundation for Infantile Paralysis, Inc., for continuing laboratory research work on the grouping of the strains of poliomyelitis viruses. This is the fourth yearly grant from the Foundation and the third grant for this particular research problem. The work is being done under the direction of Dr. Herbert A. Wenner, associate professor of pediatrics and bacteriology and chairman of the research committee at the school.

"We have now succeeded in grouping about 50 strains of poliomyelitis viruses," Dr. Wenner said, "and it is possible that this year will see the end of the problem of virus grouping. This will bring us face to face with the problem of the feasibility of an immunization program to prevent polio. This can be fully decided only when all results are in."

# Case Report From the University of Kansas Medical Center

## Congenital Cerebrovascular Aneurysm Without Localizing Signs

### Clinical Pathological Conference

Edited by Glen R. Shepherd, M. D., and Mahlon H. Delp, M. D., from recordings of the conference participated in by the departments of medicine, pathology, psychiatry and neurology, roentgenology, and the junior and senior classes of medical students.

### Case Presentation

G. N., a 53-year-old white male, was admitted on February 24, 1951, and expired on February 26, 1951. The patient developed a severe frontal headache on February 19 and six hours later complained of vertigo, weakness of the lower extremities, and chills. On the evening of February 19, irrationality developed and continued until February 23. During this period no food or fluids were ingested. No other neurological signs developed. On February 23 the patient's mind became clear and remained so for about eight hours. After this brief interval the mental confusion reappeared and became progressively worse. The patient was admitted to KUMC.

Past history: Although the history was inadequate, it was learned that a diagnosis of Marie-Strumpell arthritis was made in 1930. This disability was manifest by complete fixation of the spine, except for a slight mobility in the cervical region. Other than this, the patient was well until September, 1950, when severe intermittent frontal and occipital headaches began. These continued until the time of death. It was not determined whether or not a pre-existing hypertension was present. The past history was otherwise noncontributory.

Family history was noncontributory.

System review: The patient had complained intermittently of spots before the eyes of three months duration. Mild exertional dyspnea was noted as well as a "sticking pain" in the left chest for about one month. There were no other significant complaints.

Physical examination: Blood pressure was 190/85, pulse 125 and regular. Temperature was 103°F. rectally. Respiration was 20. The patient was poorly nourished, poorly developed, and acutely ill on admission. He rolled from one side to the other using all extremities and talked constantly but was completely disoriented. The pupils were miotic but reacted to light. The conjunctiva were negative. The extraocular movements appeared physiological. There was marked venous congestion and minimal papilledema bilaterally. A venous hemorrhage was noted in the left fundus. The ears and nose were negative. There was marked

dehydration of the buccal mucosa. The neck was almost completely fixed by arthritis. The chest was clear to auscultation and percussion. The heart was normal in size. The sounds were clear and regular without murmurs. The abdominal muscles were slightly tense but otherwise the abdomen was negative. The cranial nerves were intact. Deep reflexes were not present. No sensory loss was demonstrated. The spine was a typical poker spine. There was a marked kyphosis.

Laboratory examination: The urine was acid in reaction with a specific gravity of 1.020, albumin 2+, sugar negative, microscopic negative. Complete blood count showed 4,430,000 red blood cells, 81 per cent hemoglobin, 15,800 white blood cells, 70 polys, 27 lymphocytes, and 3 monocytes. Standard tests for syphilis were negative. NPN was 95, creatinine 4.15, CO<sub>2</sub> was 20.3, and sugar 168. Several attempts to obtain spinal fluid failed because of the poker spine. Thereafter, a cisternal tap was done. Cisternal fluid was bright red with blood, the findings being: 15,700 red blood cells, 50 white blood cells, 70 per cent polys, 30 per cent lymphocytes, 77.6 mgm. per cent sugar, 725 mgm. NaCl. Serology was negative; colloidal gold 000000000, total protein 66.6 mg. per cent. An acid fast smear, a blood culture, and a routine spinal fluid culture were negative.

Hospital course: On admission to the hospital the patient was quite active, talked constantly but was always incoherent. Parenteral fluids were started. Aqueous penicillin, 200,000 units every three hours, was given. The temperature continued elevated, varying from 101° F. to 105.8° F. rectally. By the morning of February 25, the patient was comatose. The neck was in marked extension and nuchal rigidity was definitely present. The pupils at this time were still miotic but reacted to light. No deep or pathological reflexes were present. At 3:00 p.m. on February 25 the patient became slightly cyanotic. The pupils became dilated and fixed. The eye grounds were unchanged. The respiration increased to 36 and the pulse to 150. At 1:00 a.m. the blood pressure dropped to 90/60. Fifty cc. of 50 per cent glucose intravenously produced a temporary improvement, but he again went into shock and expired at 3:05 a.m.

Question: How soon after spinal puncture was there a change in the patient's condition?

Dr. Joe Stockard (Medicine Resident): There was no change following the cisternal tap.

Question: Was there xanthochromia of the supernatant?





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Feinberg, S. M.: Asthma—Present Status of Therapy, Chicago M. Soc. Bull. 51:1062 (June 18) 1949.

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Dr. Stockard: It was slightly xanthochromic.

Dr. Mahlon Delp: There were no electrocardiographic tracings, but chest and skull films are available.

Dr. Don Germann (Roentgenology Resident): The chest film shows very little. The heart is not large. Costophrenic angles are clear, and there is some increased marking in the left infra-clavicular area, but it doesn't appear recent. There was much arthritis of the spine.

Skull films were taken and show no pathological intracranial lesions.

#### Differential Diagnosis

Mr. Charles W. Dreher (Student): When this patient was admitted with elevated temperature and central nervous system signs, I suspect the staff men were looking for some sort of intracranial lesion. At that time, the patient had not developed the meningitic signs.

A likely diagnosis might be encephalitis. Until a spinal tap is done, most of the intracranial lesions are pretty hard to differentiate. One thing significant is that the patient showed no localizing signs. There was only delirium, confusion, and a history of prodromal signs and symptoms of headache.

The spinal fluid examination was practically pathognomonic of one of two conditions: either a subarachnoid hemorrhage or a cerebral hemorrhage with extension into the subarachnoid space.

The pathogenesis for subarachnoid hemorrhage most frequently in an earlier age group is congenital aneurysm. This man, aged 53, would probably have a different cause than this. It is possible that it was on an arteriosclerotic basis although the history and clinical findings do not indicate that this man suffered from marked arteriosclerosis. Nothing in the eye grounds on fundoscopic examination indicated arteriosclerotic changes in the cerebral vessels. I tend to believe, however, that arteriosclerosis was present.

A further diagnosis to consider would be that of trauma. It is frequently a cause of subarachnoid hemorrhage. There is no such history.

Up to this point, a congenital aneurysm seems the most likely cause, although it is rather an advanced age to make itself first apparent. With the onset of headaches in September, it could have been hypertension or the congenital aneurysm. Usually, one has localizing signs with an aneurysm but that is not necessarily the case. Frequently the only signs are intermittent headaches, usually frontal or fronto-occipital. These this patient had. One would like to have some localizing signs such as involvement of the oculomotor nerve or abducens nerve, for example, because such an aneurysm usually occurs in the circle of Willis and usually the internal carotid

or one of the vessels anterior to that. It is less often found posteriorly.

The xanthochromia in the spinal fluid would indicate that there had been some previous bleeding into the spinal canal with disintegration of erythrocytes. With that, a condition occurs that resembles meningitis very much, the so-called sterile meningitis. The patient here considered did present meningitic signs after his admission to the hospital.

Frequently with subarachnoid hemorrhage, you find an elevated body temperature with peripheral leucocytosis. This patient had leucocytosis of 15,000. A count of 20,000 in the absence of other signs of systemic infection is almost pathognomonic of subarachnoid hemorrhage.

There are some confusing aspects to the case. The blood chemistry findings were perhaps on the basis of dehydration. What had the urinary output been?

Dr. Stockard: Incontinence occurred. I estimate the output to have been 300 cc. the afternoon before death.

Mr. Dreher: Well, one thing is normal and that is the specific gravity of 1.020. The hyperpyrexia and dehydrated state, the increased metabolism and perhaps faulty renal function could all be associated. The blood sugar elevation is a frequent finding in intracranial lesions, a subarachnoid hemorrhage or a cerebral hemorrhage. It does not mean diabetes here, especially without glycosuria. The exact mechanism is a little difficult to explain. It is known empirically that it characteristically occurs, possibly due to stimulation of the adrenal gland.

I think this patient experienced more than one subarachnoid hemorrhage. I believe the initial bleeding occurred on February 19. A larger hemorrhage occurred about 3:00 p.m. of the day before death with a loss of vasomotor tone, probably involvement of vasomotor centers, and general peripheral collapse.

Dr. Delp: His blood pressure was recorded as 190/85. Do you have any explanation for this reading and what connection does it have?

Dr. Dreher: The increased intracranial pressure could account for the systolic rise. The diastolic is not markedly elevated. I doubt that he had severe hypertension. I can't decide without a more satisfactory history whether the elevated systolic is a reflection of the increased intracranial pressure and a compensatory increase in blood pressure to maintain the cerebral circulation, or whether it was a part of previous disturbance.

#### Clinical Discussion

Dr. A. Theodore Steegmann (Neurology): When the patient was first admitted, there were several very confusing elements in this case. These made



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the diagnosis difficult. In the first place, we got a definite history from the wife of severe headaches since September. Naturally, seeing a patient admitted in stupor, one would have to think of some intracranial lesion—not an acute sudden lesion but something that had been going on for a long time. We naturally would think of subdural hemorrhage, possibly following trauma.

Another confusing factor in the history was the fact that the patient had not had any fluids for about four days. This brought up the question as to whether the fever he had might indicate some other type of intracranial lesion such as a brain abscess or whether it was simply due to dehydration.

The patient was not delirious, as someone stated, but was in a state of stupor. When you aroused him from the stupor he would answer questions quite rationally, but would soon drift back into unconsciousness.

A spinal puncture ordinarily would have been done much sooner and perhaps would have made the diagnosis clearer, but it was impossible. Here was a man who had a completely rigid back in marked kyphosis. There was so little movement in the cervical spine that one could not be certain of nuchal rigidity.

Another factor which made us hesitate to do a cisternal puncture on the night of admission was the tremendous retinal venous hyperemia. The veins were at least four times the diameter of the arteries and showed a tremendous compression where they crossed the arteries. In the left fundus, there was a large hemorrhage in the inferior lateral quadrant. That brought up the question again of whether we were dealing with some expansive intracranial lesion and whether it would be wise to do a puncture—a cisternal puncture—or whether it would be better to do a ventriculogram. The result was that I called Dr. William Williamson (neurosurgeon) and he thought we should not do a puncture on the evening of admission.

Incidentally, the patient's veins over the scalp were markedly dilated.

The result was that on the evening of admission, we procrastinated in doing a puncture. The following morning the cisternal puncture was done and revealed bloody spinal fluid. This went a long way in clearing up certain points. It would probably exclude a subdural hemorrhage because in the majority of cases of subdural hemorrhage the spinal fluid pressure may be elevated but the fluid will be clear. The xanthochromic fluid, of course, indicated that there had been a previous hemorrhage. The absence of localizing signs made one think that the subarachnoid bleeding was coming from a lesion in some of the major vessels of the brain, vessels that

were not compressing the nerve roots or structures which would give localizing signs.

If I see another case like this, I would still hesitate to do a puncture. I'd always look at the eye-grounds first, of course. You ought to be sure to distinguish between when it would be safe and when it wouldn't be safe. This is a case in which you are on the fence.

Dr. Delp: Dr. Berry, when you encounter a patient who has a fever of 105, do you think the height of the fever classifies the patient into any group of diseases?

Dr. Max Berry (Medicine): I think so. It is higher than we usually see, as you indicate, higher than the ordinary patient with a febrile illness would run on the medical wards. It makes you immediately suspicious of a central nervous system cause for his fever, although such is not 100 per cent diagnostic. Nor do I refer solely to meningitis.

Dr. Delp: Brief as that statement is, I believe it's very appropriate. I'm very certain that each time I've seen anybody with a fever of 105° F., I immediately think of some central nervous system lesion. Not uncommonly you see such people with meningitis, but it may represent any other type of intracranial lesion. I think that many of the patients with acute meningitis or cerebrovascular accidents of any type not infrequently expire with temperatures higher than 106 or 107° F. The highest elevations of fever that I have seen have invariably been in patients with central nervous system lesions of some sort. It isn't quite clear in my mind, Dr. Stockard, as to why this patient was so dehydrated. Was it simply a factor of his disorientation and coma?

Dr. Stockard: It was simply that he hadn't had any fluid at all for four days. He had nothing by mouth except during that one short interval of about eight hours.

Dr. Delp: Are there any dissenting opinions about this case? Any better opinions?

Question: I had the thought that this could have been a hypertensive patient with a cerebrovascular accident, with the latter picture coming in as an extension of a concurrent infection. The infection might have contaminated the spinal fluid upon rupture of a cerebral artery. In other words, could this be primarily a cerebrovascular accident and secondarily an extension of an infection?

Dr. Delp: Does that seem possible to you, Dr. Steegmann?

Dr. Steegmann: I think that one would have to keep in mind that blood in the spinal fluid itself sets up a meningitis. Blood is irritating to brain tissue as well as to the meninges. You always get a meningitic picture in subarachnoid hemorrhage so that



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really a subarachnoid hemorrhage is a pseudo-meningitis. You cannot differentiate some patients clinically from a purulent meningitis until you do a spinal puncture and find that the fluid is grossly bloody. Once the blood has been in the subarachnoid space for several hours, as it must have been in this patient, meningitic symptoms would develop.

Dr. Delp: Dr. Peete, do you think you could dismiss from consideration the possibility that this patient might have had hypertension for some period of years? That is, regardless of what happened to him just prior to death.

Dr. Don Carlos Peete (Medicine): I think the possibility of coarctation of the aorta always should be thought of in patients who have sudden severe brain hemorrhage. Maude Adams, in a large series of patients with coarctation of the aorta, found that not only was there a congenital defect in the aorta itself but also an unusual number of patients had congenital aneurysms of the brain associated with coarctation of the aorta. Many times the coarctation is not the high-grade type; it is a milder type. So, I think one must keep in mind this possibility for increased blood pressure. You cannot rule out the possibility of increased blood pressure even in an individual only 53 years old. We know more and more that arteriosclerotic disease in some individuals starts at a very early age. If this man had premature arteriosclerosis with changes in the kidneys, he could have had a hypertension severe enough to produce the hemorrhage.

Dr. Don Germann: He had no notching of his ribs and I think coarctation would have produced a larger heart than he had at 53 years of age.

Dr. Delp: Anyone else like to comment regarding this man's blood pressure? Dr. Berry?

Dr. Berry: He doesn't have much of a diastolic pressure but you can't tell. He had a fever and the fever itself might reduce his pressure. I think the possibility of a pre-existing hypertension considerably above the level found here is still present. I don't think it accounts for the headache since September, which is a salient point in the history.

Dr. Sloan Wilson (Medicine): Doesn't the blood pressure sometimes drop following a hemorrhage?

Dr. Steegmann: Of course it can, but if you have increased intracranial pressure the systolic pressure can also rise. There is compression on the cerebral vessels with a consequent increased demand for blood to the brain with reflex rise in blood pressure up to a certain point. If the intracranial pressure keeps on going up, eventually that point will become so high that it can no longer be kept up and eventually that patient will go into shock. That is the way some patients die, with a progressively increasing intracranial pressure.

Dr. Delp: My feeling about the matter is that many patients who have intracranial bleeding—hemorrhage, the ordinary garden variety of stroke—not infrequently have a much higher blood pressure the first two or three hours after such an accident than they had before or have subsequently. It is a rather common observation that two or three days following the accident the blood pressure settles down to about the pre-accident level. May we now hear about the pathological findings?

#### Pathology Report

Dr. Rachel Spiller (Pathology Resident): The body was that of a 53-year-old white male. There was extreme kyphosis. The fixed curvature of the spine was such that with the body lying supine, the upper back made an angle with the table of about 45 degrees.

The heart weighed 350 grams, was slightly dilated, and showed minimal arteriosclerosis. The lungs showed anthracosis. There were numerous emphysematous blebs on the surfaces of both lungs. There were some nodules of infiltration in both lower lobes. From the cut surface of these areas there could be expressed a reddish-gray fluid. The rest of the organs did not show anything of interest except the brain.

The brain weighed 1465 grams. The convolutions were swollen with shallow sulci. There was a subarachnoid hemorrhage over both the base and vertex of the brain, especially in the left frontal region.

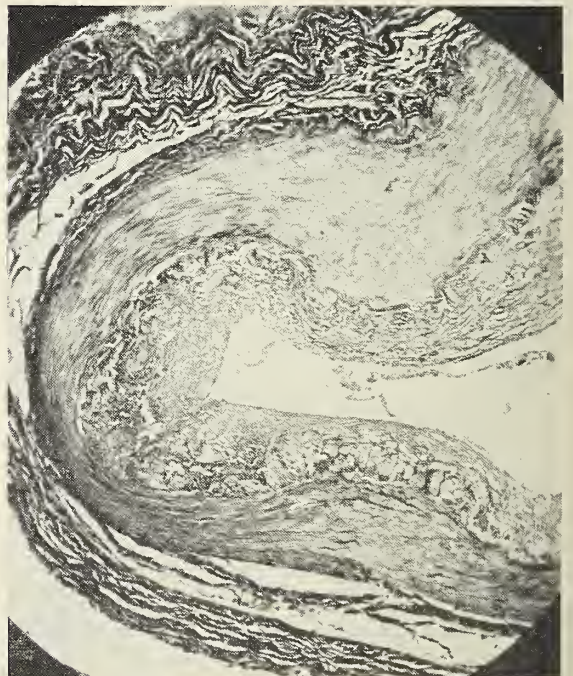


Figure 1. Wall of aneurysm showing disappearance of the internal elastic membrane and thinning of the media.



# Dependable Protection

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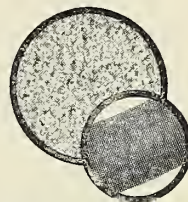
1. Clark, Le M.: The Vaginal Diaphragm. St. Louis, C. V. Mosby Company, 1938; p. 43.  
2. Dickinson, R. L.: Techniques of Conception Control. Baltimore, Williams & Wilkins Company, 1950; p. 17.



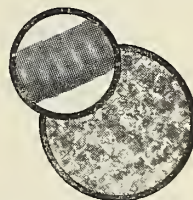
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Unretouched photomicrograph of the dome (enlarged 10 diameters) and the rim (inset) of a conventional-type diaphragm.



The leptomeninges were cloudy. The basilar vessels were small but were thickened and showed some atheromatous plaques. A thick mass of clotted blood completely surrounded the optic chiasma and the hypothalamic region and extended back to the anterior surface of the pons. Careful dissection of this mass of blood revealed an aneurysmal dilatation of the anterior communicating artery between the hemispheres. This had ruptured near its superior surface and had bled upward into the region of the septum pellucidum. There was also a mass of blood lying between the hemispheres just above this lesion. The aneurysm measured three to four mm. in diameter and was estimated to be about one centimeter long.

There was also a circumscribed area of hemorrhage in the left frontal lobe just beneath the cortex. This had broken into the subarachnoid space. This hemorrhage measured two by two and one-half centimeters in diameter.

The ventricles were moderately dilated but did not contain blood.

The provisional gross anatomical diagnoses were as follows: aneurysm of the anterior communicating artery which had ruptured producing extensive subarachnoid hemorrhage over the base of the brain, between the frontal lobes, and hemorrhage into the brain substance in the region of the septum pellucidum; circumscribed hemorrhage in the left frontal lobe with subarachnoid hemorrhage over the vertex of the brain; bronchopneumonia; pulmonary emphy-

sema; Marie-Strumpell arthritis of the spine; and generalized arteriosclerosis.

Dr. Ann Pollak (Pathology): In this section through the aneurysm the internal elastic membrane has disappeared in certain areas so there is partial dissolution of the internal elastic membrane. All of this represents moderate arteriosclerosis of the subintimal zone of the usual type.

The media shows no elastic tissue whatsoever which is normal with cerebral vessels. The medial portion is composed of muscle and you'll notice in this area it is somewhat thinned out. This section doesn't show the point of perforation but presumably the thinning out becomes even more marked in that part.

This patient had a confluent bronchopneumonia of both lobes. All over are myriads of polys, some large macrophages or giant cells, and areas of hemorrhage in the lungs. This is pneumonia in a person who is unconscious. It is almost invariably found when a patient comes to autopsy who has been unconscious for any length of time. In addition this pneumonia shows numerous areas of hemorrhage. This might represent aspiration and hemorrhage due to hydrochloric acid getting into the lungs in the process of aspiration and causing considerable necrosis of lung tissue.

These aneurysms are a relatively common lesion, frequently multiple, and will usually blow out in early to late middle adult life. It has been known for a long time that most of them show a lack of the

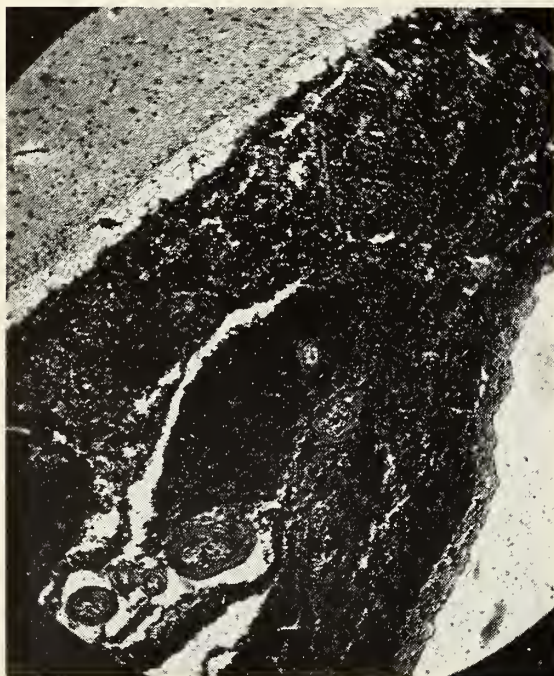


Figure 2. Meninges showing extensive subarachnoid hemorrhage.

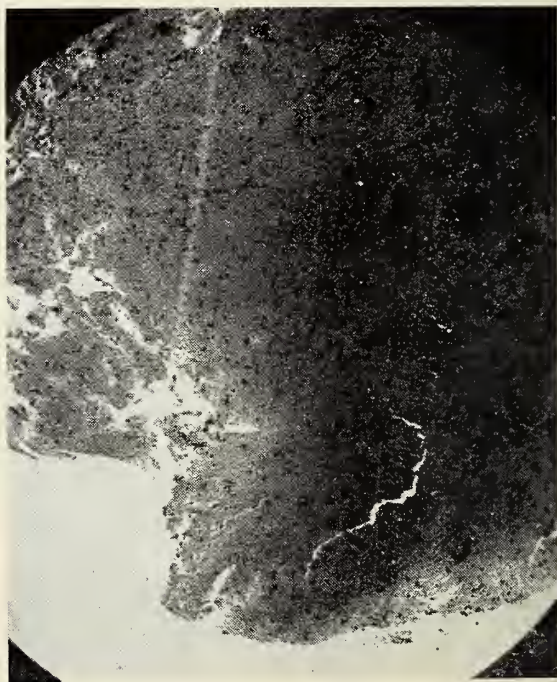


Figure 3. Brain showing fresh area of softening.





# Nutritional Status...

## AN IMPORTANT FACTOR IN OLD AGE

A RECENT study<sup>1</sup> of the health and nutritional status of 200 elderly patients and their dietary habits revealed their food intake to be deficient in iron, calcium, protein, and, particularly, B complex vitamins. In many instances the lassitude and premature weakness of the elderly are due to such deficiencies.

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The nutritional contribution of three servings of Ovaltine in milk (the recommended daily amount) is defined in the appended table.

1. Bortz, E. L.: Management of Elderly Patients, Postgraduate Med. 3:186 (Mar.) 1950.

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CARBOHYDRATE . . . . .	65 Gm.	RIBOFLAVIN . . . . .	2.0 mg.
CALCIUM . . . . .	1.12 Gm.	NIACIN . . . . .	6.8 mg.
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IRON . . . . .	12 mg.	VITAMIN D . . . . .	417 I.U.
COPPER . . . . .	0.5 mg.	CALORIES . . . . .	676

\*Based on average reported values for milk.

Two kinds, Plain and Chocolate Flavored. Serving for serving, they are virtually identical in nutritional content.



muscle coat and sometimes a lack of elastic coat in the vessel involved. Furthermore, these lesions are to all intents and purposes confined to the cerebral vessels. All these factors have excited the interest of pathologists for a long time.

It has always been said that there are two types of cerebral aneurysms—congenital ones and arteriosclerotic ones.

These aneurysms are more common in the circle of Willis than they are elsewhere in the body because the cerebral vessels have thinner walls than vessels elsewhere, much thinner in relation to the size of the lumen. This is obvious in the specimens and is normal to the cerebral vessels. Furthermore, the cerebral vessels have another anatomic peculiarity. They normally have no elastic tissue in the media. They have an internal elastic membrane and that is all.

Of course, there is not one but multiple causes of arteriosclerosis. One of these is trauma. According to investigators in St. Louis, the effect of trauma on the aorta is to cause degeneration of the elastic fibers. But the St. Louis group feels that following degeneration of the elastic fibers, arteriosclerosis occurs in the intima. The arteriosclerosis somehow is abetted by the degenerative changes in the elastic fibers.

Regarding the situation in the cerebral vessels, this is rather illuminating. What probably happens is that these people have a congenital weakness of the wall, a congenital defect of the muscle coat. In those areas, the internal elastic membrane is the only band of tissue left surrounding the aneurysm. As long as the internal elastic membrane is intact, there is a microscopic aneurysm that will bulge. It is subject to much more trauma than any other portion of that vessel. In other words, the muscle coat is not protecting it. With that, the elastic coat will degenerate more rapidly than in other vessels.

Such a vessel will develop arteriosclerosis earlier than other vessels, especially at the aneurysm site. But the development of arteriosclerosis takes a long time, many years in fact, and is associated with arteriosclerosis elsewhere. In other words, arteriosclerosis tends to occur with advancing years. The aneurysm, which started out as a microscopic defect in the wall ruptures when a person comes to middle life.

The congenital defect causes the nidus wherein arteriosclerosis occurs earlier and more severely than it does in the other cerebral vessels.

Dr. Delp: Dr. Steegmann, do you disagree with the theories expounded in regard to this one case?

Dr. Steegmann: No, I think it is very interesting. I would like to mention work that was done by Tuthill many years ago in which he was able to

trace the original lesion of the elastic membrane to early childhood infections or diseases, so that instead of these being actually congenital they started in childhood as a result of infections and developed throughout the years. Of course, I think it is important from the clinical point of view to emphasize that you do not have to reach middle life to get a rupture of an aneurysm. I have seen a number of them in children.

Dr. Delp: Dr. Steegmann, one more question. Had you seen this patient last September, do you think you could have made the correct diagnosis?

Dr. Steegmann: No, because aneurysms in the region of the anterior communicating artery are ordinarily silent unless there is some accident that happens with rupture. Aneurysms further back, in the neighborhood of the chiasm or at one end or the other of the posterior communicating artery, may produce localizing neurological signs that will make one suspect aneurysm without rupture.

Dr. Delp: Suppose a diagnosis had been made on this patient four days prior to his entrance here, what should have been done about it?

Dr. Steegmann: Nothing that I know of.

#### Summary

A stuporous, disoriented, acutely ill patient, presenting the obvious deformity of Marie-Strumpell arthritis and having fever associated with severe dehydration, here posed a puzzling diagnostic problem. An inadequate history of episodic headaches, transitory coma, and lucid intervals focused attention upon an intracranial lesion. Spinal rigidity, and lack of cerebral localizing signs further confounded early investigation. Finally a cisternal puncture established subarachnoid bleeding. In spite of the age and presence of equivocal hypertension, the probability of bleeding from an intracranial aneurysm was correctly suggested. The explanation of intracranial aneurysmal formation resulting from trauma of stress and degenerative processes in vessels anatomically unique offered by the pathologist is interesting.

#### Committees for 1951-1952

Members of the various standing committees of the Kansas Medical Society were appointed recently by Dr. C. H. Benage, president, and are listed on Page VI of this issue of the Journal. Membership represents all fields of practice and all sections of the state. In the tabulated form in which the groups are printed, the chairman of the committee is named first and other members are listed in alphabetical order. Serving on a committee is an honor as well as a responsibility for the physicians who have been selected.



"In addition to the relief of hot flashes and other undesirable symptoms (of the climacteric), a feeling of well-being or tonic effect was frequently noted" after administration of "Premarin."

Harding, F. E.: West. J. Surg. Obst. & Gynec. 52:31 (Jan.) 1944

"All patients (53) described a sense of well-being" following "Premarin" therapy for menopausal symptoms.

Neustaedter, T.: Am. J. Obst. & Gynec. 46:530 (Oct.) 1943.

"It ('Premarin') gives to the patient a feeling of well-being."

Glass, S. J., and Rosenblum, G.: J. Clin. Endocrinol. 3:95 (Feb.) 1943

"General tonic effects were noteworthy and the greatest percentage of patients who expressed clear-cut preferences for any drug designated 'Premarin.'"

Perloff, W. H.: Am. J. Obst. & Gynec. 58:684 (Oct.) 1949.



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## ACTIVITIES OF MEMBERS

Dr. M. D. McComas, Jr., who recently completed a residency at Dartmouth College in New Hampshire, has returned to Kansas and is specializing in urology at the Gelvin-Haughey Clinic in Concordia.

\* \* \*

Dr. James S. Hibbard, Wichita, was recently appointed to the board of regents of Wichita University.

\* \* \*

Dr. Charles Pokorny, formerly of Los Angeles, has joined the staff of the Hertzler Clinic, Halstead, as an associate in the department of internal medicine.

\* \* \*

Dr. O. U. Need, Oak Hill, celebrated his 50th anniversary in the practice of medicine in April.

\* \* \*

Dr. W. F. McGuire, who has been stationed at Fort Riley since he was called into the Army last November, has been released from service under the rotating plan for reserve officers and has returned to his pediatric practice in Wichita.

\* \* \*

Dr. William N. Harsha, resident in surgery at the University of Kansas Medical Center, received a \$500 award last month from the American Cancer Society for his work in cancer research.

\* \* \*

Dr. C. S. Adams, St. John, was honored at a community celebration on May 30, an event sponsored by the St. John American Legion and its auxiliary. Dr. Adams has been practicing there for almost 50 years.

\* \* \*

Dr. R. J. Kinney, medical consultant at the Topeka State Hospital, was speaker at a meeting of the Iola Rotary Club on April 26. He discussed mental health.

\* \* \*

Dr. Victor North, Wichita, has reported to the Navy in St. Louis for assignment to active duty.

\* \* \*

Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, was principal speaker at the first rural health conference of the Minnesota State Medical Association recently.

\* \* \*

Dr. H. B. Vallette was named city health officer of Beloit last month.

\* \* \*

Dr. Richard Lowman, 84, who has been practicing in Kansas City for 60 years, was made an hon-

orary member of the Wyandotte Academy of General Practice at its May meeting. Dr. Emmerich Schulte was installed as president at the meeting, succeeding Dr. Albert Harms.

\* \* \*

Dr. C. Dean Baker, Wichita, has been called to active duty with the Army and recently reported to San Antonio, Texas, for assignment.

\* \* \*

Dr. Philip J. Clark, Hays, was speaker at a recent meeting of the P.T.A. in Grinnell. He spoke on the subject of cancer.

\* \* \*

Dr. James T. Makinson, who has been practicing in LaCrosse since 1948, has closed his office there and plans to do postgraduate work.

\* \* \*

Dr. B. C. Beal, Clearwater, was speaker at a meeting of the Clearwater Women's Study Club recently. His subject was "Ills Affecting Mankind."

\* \* \*

Dr. J. W. S. Cross, Osborne, was honored by the American Legion at a Sixth District meeting held in Russell last month and was presented a plaque. He is the oldest member of the American Legion in Kansas.

\* \* \*

Dr. O. E. Stevenson, former superintendent of the State Hospital for Epileptics at Parsons, who retired from that position last year, will resign from the active staff of the institution July 1. It has also been announced that Dr. Howard V. Bair, now a staff psychiatrist for the Mendocino State Hospital at Talmage, California, will become clinical director of the hospital at Parsons on July 1.

\* \* \*

Dr. Harold H. Jones, Winfield, addressed a public meeting at Iola last month on the subject of multiple sclerosis.

\* \* \*

Dr. Robert H. Riedel, director of the Kansas State Board of Health division of cancer control, was appointed last month to serve as acting executive secretary of the board until the position is permanently filled.

\* \* \*

Dr. M. J. Renner, Goodland, was one of the speakers at a meeting of District Nine of the Kansas State Nurses Association last month. Dr. Robert Gribble, Dodge City, was a speaker at a meeting of District Eight held at Garden City.

\* \* \*

Dr. F. L. Ford and Dr. George F. Helwig, Topeka, were appointed to the city-county board of health, for Topeka and Shawnee County, last month.



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1. Nettleship, A.: Arch. Dermat. & Syph. 61:669, 1950

2. Brewer, W. C.: Arch Dermat. & Syph. 61:681, 1950

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Sodium propionate 12.3%  
 Propionic acid . . . 2.7%  
 Sodium caprylate . . 10.0%  
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 sulfosuccinate . . . 0.1%  
 Inert ingredients . . 74.9%  
 including n-Propyl  
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Dr. J. L. Lattimore and Dr. Andre Baude, Topeka, were speakers at the annual meeting of the Kansas Society of Medical Technologists held in Topeka May 20. Dr. Lattimore also spoke that evening at a banquet for members of Sagamore, men's honorary society at Washburn University, Topeka.

\* \* \*

Dr. C. J. Kurth, Wichita, was elected vice president of the Guild of Catholic Psychiatrists at a meeting held in Cincinnati last month in connection with the annual meeting of the American Psychiatric Association. Later in the month he participated in a symposium on "How Religious Leaders Can Contribute to the Mental Health of the Community" sponsored by the State Hospital for Epileptics at Parsons.

\* \* \*

Dr. E. C. Duncan, Fredonia, who will have completed 50 years of practice on June 10, will be guest of honor at an open house at the Christian Church in Fredonia on that day. Members of the Wilson County Medical Society and other friends will be hosts.

\* \* \*

Dr. E. K. Enns, Newton, is now a diplomate of the American Board of Otolaryngology, having successfully taken the board examinations early in May.

\* \* \*

Dr. Thomas Dechairo, Westmoreland, was speaker at the alumni-senior banquet at the Arma high school on May 10.

\* \* \*

Dr. Thomas G. Orr, Jr., specializing in general surgery, has opened an office in the Plaza Time Building in Kansas City, Missouri.

\* \* \*

Dr. Glenn Lessenden, who has been practicing in Tonganoxie, will close his office on June 9 to go to New York to report for duty with the Army.

\* \* \*

Dr. R. M. Heilman, Topeka, deputy state health officer, has resigned his position with the Kansas State Board of Health to take up similar work for the Oregon State Board of Health. He will move to Portland about the middle of June.

\* \* \*

Dr. John M. Porter, Concordia, delegate to the American Medical Association, served as a member of the Committee on Rules and Order of Business at the 1951 session in Atlantic City early this month.

\* \* \*

An article entitled "Federal Efficiency?" by Dr. Louis B. Gloyne, Kansas City, was published in a recent issue of Medical Times.

\* \* \*

Dr. B. W. Walters, Marquette, will begin a year's

fellowship in ophthalmology at the Bunts Institute, the Cleveland Clinic Foundation, on July 1. Dr. Daryl Fuller, who will be released from service with the Navy on June 18, will take over Dr. Walters' practice in Marquette.

## DEATH NOTICES

### ANDREW ALLEN OLSON, M.D.

Dr. Allen Olson, 52, who had practiced in Wichita for 25 years, died May 15 in Rochester, Minnesota, following an operation for brain tumor. He was graduated from the University of Kansas School of Medicine in 1925 and later took postgraduate work in the City College of New York and at the University of Paris. He specialized in allergy, limiting his practice to that field. He was an active member of the Sedgwick County Medical Society and a fellow of the American College of Allergists.

\* \* \*

### LUCENA CHASE AXTELL, M.D.

Mrs. J. T. Axtell, 85, one of the first women physicians in Kansas and widow of the founder of Axtell Christian Hospital in Newton, died at her home in Newton on May 5. After her graduation from the College of Physicians and Surgeons, Kansas City, in 1897, she practiced in association with her husband and served for many years as superintendent of nurses at the hospital. She retired from active medical work some years ago.

\* \* \*

### FRED EDWARD PATRICK, JR., M.D.

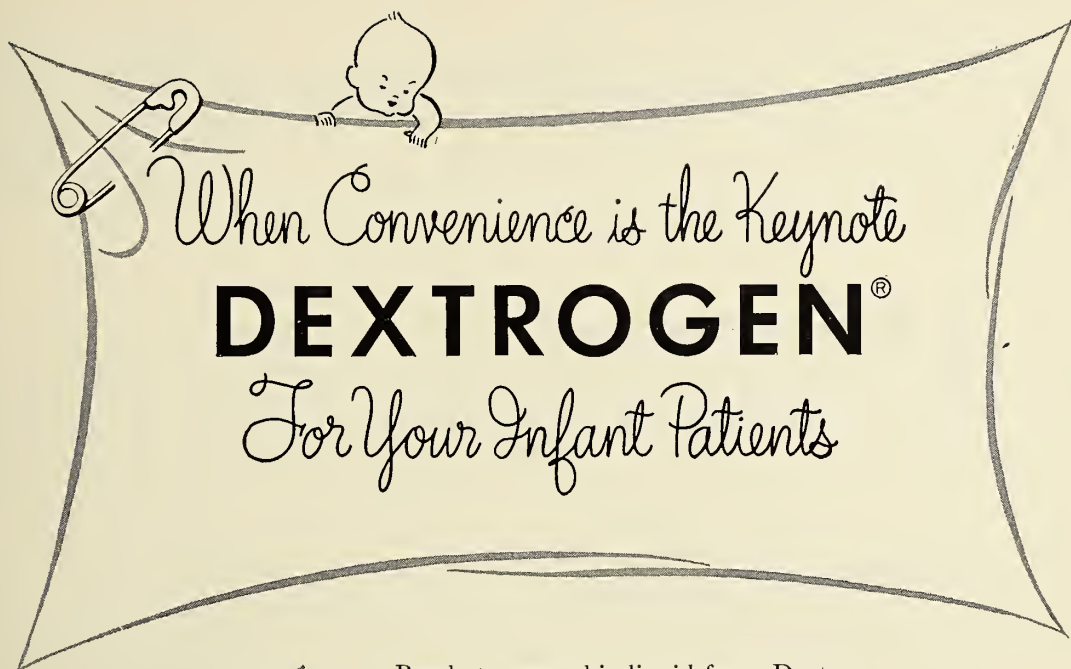
Dr. F. E. Patrick, Jr., 32, Mission, died at his home May 16. He had suffered a cerebral hemorrhage last July, but had been able to practice part time until the day before his death. He was a member of the 1943 class of the University of Kansas School of Medicine, and was a veteran of World War II. He practiced for several years in El Dorado before moving to Mission in March, 1950.

\* \* \*

### WILLIAM LUCAS BUTLER, M.D.

Dr. W. L. Butler, 64, an active member of the Stafford County Society, died in Hutchinson, May 25. He came to Kansas after his graduation from the University of Tennessee College of Medicine in 1912, and had practiced in Stafford since that time, except for an interval during World War I when he served in the Army medical corps. He had been a Santa Fe surgeon for many years and was a member of the American Association of Railway Surgeons.





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## COUNTY SOCIETIES

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The Crawford County Medical Society entertained 100 physicians and guests from nine southeastern Kansas counties at a dinner meeting at the Hotel Stilwell, Pittsburg, on April 26 as a tribute to Dr. C. H. Benage, president of the Kansas Medical Society. Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, was principal speaker, and Dr. J. D. Pettet, Pittsburg, served as toastmaster.

\* \* \*

The program for the May meeting of the Sedgwick County Society was presented by the Wichita Academy of Pediatrics, a symposium with Dr. Vincent L. Scott as moderator. Those who took part and their topics for discussion are: Dr. Thomas Hurst, "Incidence of Infant Mortality in This Area;" Dr. R. A. Nelson, "Deleterious Factors During the Period of Organogenesis and Important Anomalies;" Dr. Walter Schafer, "General Care and Feeding with Especial Reference to the Physiologic Handicaps of the Premature;" Dr. Katherine Pennington, "Disturbances of the Respiratory System;" Dr. C. T. Hinshaw, "General Consideration of the Hematopoietic System with Special Reference to Rh Sensitization;" Dr. Roy Knappenberger, "Disturbances of the Central Nervous System Including Trauma, Congenital Defects, and Infection."

\* \* \*

Dr. C. W. Inge, who recently moved from Formoso to Concordia, was honored by the Jewell County Society at its April meeting. He had served that group as its secretary-treasurer for the past 26 years. The following new officers were elected at the meeting: president, Dr. C. S. Hershner; vice president, Dr. C. W. Plowman; secretary-treasurer, Dr. R. M. Owensby.

\* \* \*

A talk on the operation of the British National Insurance Act was given the Cowley County Society at a recent meeting in Winfield by Father James Wilkinson, assistant pastor of Holy Name Church in Winfield, and formerly of Liverpool, England. He discussed many phases of the health insurance plan.

\* \* \*

Dr. H. O. McPheeters, Minneapolis, Minnesota, was guest speaker at the April meeting of the Wyandotte County Society. His subject was "Modern Treatment of Varicose Veins."

\* \* \*

A meeting of the Tri-County Medical Society was held at Wellington, April 26. Speaker was Dr. Earl D. McBride of Oklahoma City, who discussed "De-

generative Diseases of the Joints."

\* \* \*

Two films were shown at a meeting of the Shawnee County Society held May 8, "Breast, Self Examination" and "Gastrointestinal Cancer—the Problem of Early Diagnosis." At the business session the following delegates were elected: Dr. Francis T. Collins, Dr. Don C. Wakeman, Dr. Charles Joss, Dr. R. Dale Dickson, Dr. Homer L. Hiebert, Dr. Lucien R. Pyle, Dr. Dwight Lawson, and Dr. B. J. Ashley. The June meeting of the group will be a picnic with wives of members as guests.

\* \* \*

Dr. and Mrs. M. L. Mollohan, Seneca, entertained members of the Nemaha County Society and Auxiliary at a dinner meeting at the Gilford Hotel, Seneca, on May 1. Dr. R. E. Capsey was named delegate to the state meeting with Dr. Arthur Haynes as alternate. Speaker for the evening was Mr. Oliver E. Ebel, executive secretary of the state society.

\* \* \*

Members of the Wilson County Society held a joint dinner meeting with members of the Auxiliary at the Coffee Shop in Fredonia on May 9. Dr. A. Mary Hayden was named delegate to the state meeting and Dr. C. E. Stevenson was chosen as alternate.

\* \* \*

A meeting of the Cloud County Society was held at the Concordia Country Club on May 8, a dinner meeting with members of the Auxiliary as guests. The doctors later held a scientific session at the Gelvin-Haughey Clinic with Dr. Ferdinand Helwig, pathologist from Kansas City, as speaker.

\* \* \*

The Finney County Society met at Garden City on May 21. Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, was principal speaker.

\* \* \*

The May meeting of the Wyandotte County Society was held at the city-county health building in Kansas City on the 22nd. Dr. L. H. Coale spoke on "Common Problems in Electrocardiography." Dr. J. G. Lee, Jr., presented a paper on "Nutrition in Pregnancy" with Dr. H. M. Floersch as discussor.

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The great physicians of all time have understood that medicine is not a study of disease, but a study of man: an individual who is a member of a family and who is part of a community. . . . The purpose of medicine is to make available to all the people, in the greatest possible degree, the achievements of science as they relate to the promotion of health and to the prevention and treatment of disease.—*W. G. Smillie, M.D., New England Journal of Medicine, January 12, 1950.*



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## ANNOUNCEMENTS

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The fifth congress of the Pan-Pacific Surgical Association will be held in Honolulu, November 7-19, 1951, with scientific sessions beginning on November 12. Hotel and travel reservations may be made through the association office, Suite 7, Young Hotel Building, Honolulu, Hawaii.

\* \* \*

The Michael Reese Hospital Postgraduate School, Chicago, announces two two-week postgraduate courses to be offered in July. The first, on "Diseases of the Endocrines—Physiology and Diagnostic Methods," will be offered from July 9 to July 21, with Dr. Rachmiel Levine as coordinator. The second, "Hematologic Diagnosis," under the direction of Dr. Karl Singer, will begin July 23 and end August 4.

Additional information may be secured from Dr. Samuel Soskin, Dean, 29th Street and Ellis Avenue, Chicago 16, Illinois.

\* \* \*

The National Gastroenterological Association announces that its course in gastroenterology will be given at the Drake Hotel, Chicago, September 20-22. Dr. Owen H. Wangenstein, professor of surgery at the University of Minnesota Medical School, will serve as surgical coordinator and Dr. I. Snapper, director of medical education at Mount Sinai Hospital, New York, will be medical coordinator.

Physicians interested in attending are asked to write the National Gastroenterological Association, Department GSJ, 1819 Broadway, New York 23, New York.

\* \* \*

The sixth annual postgraduate course in diseases of the chest sponsored by the Council on Postgraduate Medical Education and the Illinois Chapter of the American College of Chest Physicians will be presented at the St. Clair Hotel, Chicago, September 24-28. The course is open to all physicians, but the number of registrants will be limited, applications being accepted in the order in which they are received. Tuition fee is \$50. Applications may be sent to the College, 112 East Chestnut Street, Chicago 11, Illinois.

\* \* \*

The Arthritis and Rheumatism Foundation is offering research fellowships at both the predoctoral and postdoctoral levels, the studies to be in the basic sciences related to arthritis. The predoctoral fellowships will range between \$1,500 and \$3,000 per annum, and the postdoctoral from \$3,000 to \$6,000. The deadline for applications is November 15, 1951. Application forms may be obtained from the Med-

ical Director, Arthritis and Rheumatism Foundation, 535 Fifth Avenue, New York 17, New York.

\* \* \*

The American College of Surgeons will hold its 37th annual clinical congress in San Francisco, November 5 to 9, with headquarters at the Fairmont Hotel and the Civic Auditorium. The 30th annual hospital standardization conference will be held concurrently. The combined programs will include scientific and technical exhibits, color television, cine clinics, medical motion pictures, scientific sessions, panel discussions, conferences, symposia, official meetings and forums.

### A.M.A. Meeting in Los Angeles

This year's clinical session and mid-winter meeting of the House of Delegates of the American Medical Association will be held at Shrine Convention Hall, Los Angeles, December 4-7.

Every community is entitled to safe water, food, and milk, and protection from unsafe disposal of wastes; to as safe an environment as we know how to provide including pure air; safe streets, homes, places of work, and places of education and recreation; to the best protection we know how to provide from the contagious diseases, including tuberculosis and the venereal diseases; access to good medical care and hospitalization when needed; to the best protection we know how to provide against the special hazards of maternity and infancy; to the best facilities we know how to provide for the healthy development of our children, including correction of crippling physical and mental defects; recognition and treatment of rheumatic fever and other heart disease, and to the knowledge and facilities necessary to prevent as many deaths as possible from cancer, heart disease, diabetes, and the other degenerative diseases.—*William P. Shepard, M.D., Nat. Tuberc. A. Bull., Oct., 1949.*

### A Roentgenographic Study of Edentulous Jaws (Continued from Page 267)

#### Summary

These data reveal that over one-third (35.5 per cent) of the patients in this study had jaws that at first count appeared to be normal yet after x-ray examination were found to harbor conditions that could be considered as detrimental to health. While it is questionable that metallic foreign bodies within the jaws are a source of infection, there is abundant evidence available to show that fractured roots, erupted teeth, and pathologic areas do constitute potential foci of infection. It is urged that physical examinations include x-ray surveys of the jaws even if they are edentulous.



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## BOOK REVIEWS

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*Electroencephalography in Clinical Practice.* By Robert S. Schwab, M.D. Published by W. B. Saunders Company, Philadelphia. 195 pages, 106 figures. Price \$6.50.

This book demonstrates the practical application of electroencephalography in psychiatry and neurology. The author clearly discusses important aspects of electroencephalography in differential diagnosis and its application in general practice of medicine. The material is suitably illustrated with well chosen and clearly reproduced illustrations. A bibliography and glossary are also included.

This book is highly recommended to all medical readers from the student to the specialist.—E.H.T.

\* \* \*

*Diabetes Mellitus—Principles and Treatment.* By Garfield G. Duncan, M.D. Published by W. B. Saunders Company, Philadelphia. 289 pages, 31 figures, 40 tables. Price \$5.75.

This book, written in a concise form, accomplishes the first aim of the author, namely to correlate the modern principles with the understanding and treatment of diabetes. Diabetes is classified into two forms, the mild form defined as that found in the overweight adult diabetic, who has not received insulin, the severe form found in the underweight adult, and the child diabetic. Clinical and theoretical reasons are given to support this classification.

Chapters are included which discuss the history of diabetes, the incidence and etiology, and the prognosis of the disease. The chapter on insulins is up to date and includes a discussion of NPH insulins. The section on diet is quite complete and describes with some modification the system advised by the American Diabetes Association in its attempt to obtain uniformity in diabetic diets. With this system, the food substances are divided into six different lists with accompanying exchange values. Standard diets are given in detail. The remainder of the book is devoted mostly to a discussion of the complications of diabetes, including both the acute and chronic phases, with details on management.—R.E.B.

\* \* \*

*A Textbook of X-ray Diagnosis. Chest. Second Edition.* Edited by S. Cochrane Shanks and Peter Kerley. Published by W. B. Saunders Company, Philadelphia. 702 pages, 605 illustrations. Price \$12.

This is volume II of a four volume set of books on x-ray diagnosis by British authors. It consists of two parts. Part I considers the cardiovascular sys-

tem while Part II is concerned with the respiratory system. Part I also includes a discussion of the radiography of the peripheral vessels.

As a reference book, the material included is comprehensive. Rare conditions and radiographic findings are represented as well as more common entities. Discussions of both normal and morbid anatomy are included in connection with radiographic findings, and correlation of pathology with x-ray findings is consistently attempted.

Type, composition, and binding are attractive. Illustrations of radiographs are all positive prints, a fact which will, perhaps, bring about adverse criticism from many quarters. Selection of illustrative material, however, is carried out thoughtfully.—H.H.D.

\* \* \*

*The American Illustrated Medical Dictionary. 22nd Edition.* By W. A. N. Dorland, M.D. Published by W. B. Saunders Company. 1,736 pages, 720 illustrations, including 48 plates. Price \$10.

A dictionary presents an unusual problem to the reviewer since no one physician considers himself qualified to judge its merits. However, in view of the fact that the Dorland dictionary has been "standard" for 50 years, there is no hesitancy in recommending the new edition to all in the field of medicine.

The dictionary appears with new typography and new design, adding to its utility. Thousands of new terms are included to keep the work abreast of advances in medicine and all associated sciences, and all old terms currently in use are retained.

New features of the book are a preliminary article on fundamentals of medical etymology and a table of modern drugs and dosage.

The author, a former member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association, acknowledges the assistance of an editorial board composed of Dr. Richard M. Hewitt of the Mayo Clinic, Dr. E. C. L. Miller of the Medical College of Virginia, and Dr. Arthur H. Sanford of the Mayo Foundation. He gives credit also to two special contributors and a long list of prominent physicians in specialized fields who helped in the preparation of the copy.

Rapid advances in medical fields and the addition of new words to medical terminology make the use of a current dictionary imperative for the physician. The Dorland edition will fill that need.—L.R.P.

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*The Microkaryocytes: The Fourth Corpuscles and Their Functions.* By K. C. Khorozian, M.D. Pub-



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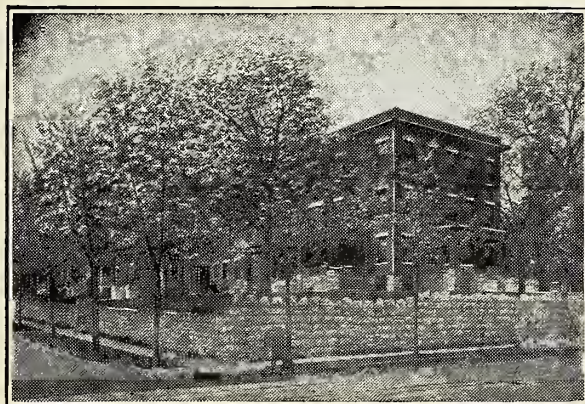
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The entire book has been based on one man's opinion, probably working independently, without proper scientific control material and without support from chemical analyses. The author develops the idea of the presence of "microkaryocytes," or extremely minute "cells" in the order of 0.1 to 0.15 microns and consisting of distinct nuclei and cytoplasm. He claims that these are present intracellularly in the nucleus, nucleolus, and cytoplasm of all cells and in all body fluids. His observations are based on materials obtained from animals and plants, which, however, have been treated so drastically during preparation that the possibility of artefacts cannot be excluded. The conclusion that the microkaryocytes are cells is based entirely on chemically non-specific staining qualities.

The enlargements of photomicrographs shown in the text are poor and unconvincing as to the presence of true cellular structures in his so-called "microkaryocytes." Moreover, little faith can be placed on enlargements of photomicrographs of structures beyond the limit of resolution of the ordinary light microscope. The book as a whole is poorly written and not entirely coherent.—H.O.Y.

\* \* \*

*Trephine Technique of Bone Marrow Infusions and Tissue Biopsies. Fourth Edition. By Henry Turkel, M.D. Published by Trephine Instruments, Inc., Detroit. 60 pages. Price \$1.00.*

This interesting small pamphlet is edited by Dr. Turkel, who has devised several needles for doing bone marrow infusions and also tissue biopsies. He states that the purpose of this publication is to stimulate the use of the emergency lifesaving methods offered to the physician by bone marrow infusion and presents simplified procedures by which diagnoses may be obtained by means of tissue biopsy. Even though the pamphlet is small, the subject matter is well covered and exceedingly well illustrated. There are many illustrations referable to methods for obtaining biopsies from various portions of the body.—S.J.W.

\* \* \*

*Paracelsus: Magic into Science. By Henry M. Pachter. Published by Henry Schuman, Inc., New York City. 360 pages. Price \$4.00.*

No character in the history of medicine has been as popular a subject for biographers as Paracelsus. Even Jerome Cardan, about whom at least six definite biographies have been written, dims in lustre when compared with Paracelsus with three biographies written in a single year, 1947, whose choice thoughts were collected in two anthologies in 1942,

whose admirers have formed the Swiss Paracelsus Society and produce regularly a Jahrbuch with exhaustive articles on every phase of Paracelsus. Goethe's Faust is filled with thoughts obviously inspired by Goethe's intense study of Paracelsus; and Browning, as is well known, wrote a celebrated poem with Paracelsus as its hero.

Most of the biographies of Paracelsus treat their hero with reverential hands, finding in him a humble Christian, a genius who was the initiator of biochemistry, of chemotherapy, and even of antibiotics. His medical contemporaries, in the main, described him as a braggart, bully, wastrel and drunkard. The medical historian Withington, after an exhaustive examination, gave an unfavorable verdict on Paracelsus, and Gurlt felt very happy that Paracelsus had had no influence on the course of surgery. On the other hand, Sudhoff began the study of Paracelsus as a young medical student and, at 85, still felt he had not exhausted the subject.

Pachter's book steers a course between the rocks of adulation and of vituperation. He does not gloss over the faults of his subject, nor does he dismiss his ideas as the mumbo-jumbo of a mystic. He gives an interesting account of a restless, earnest, dissatisfied soul, unhappy at the state of medicine of his period, unable to chart his path clearly for lack of precise knowledge, unable to express himself clearly because the terms he should have employed did not exist.—R.H.M.

### Underwriters' View of Heart Risks

Life insurance companies in the future need not be as conservative as they have been in the past in issuing insurance to men and women suffering from certain heart conditions, two speakers representing the Aetna Life Insurance Company reported to the 59th annual meeting of the Association of Life Insurance Medical Directors at New York recently. The speakers were Dr. Kenneth F. Brandon and Dr. Mather H. Neill.

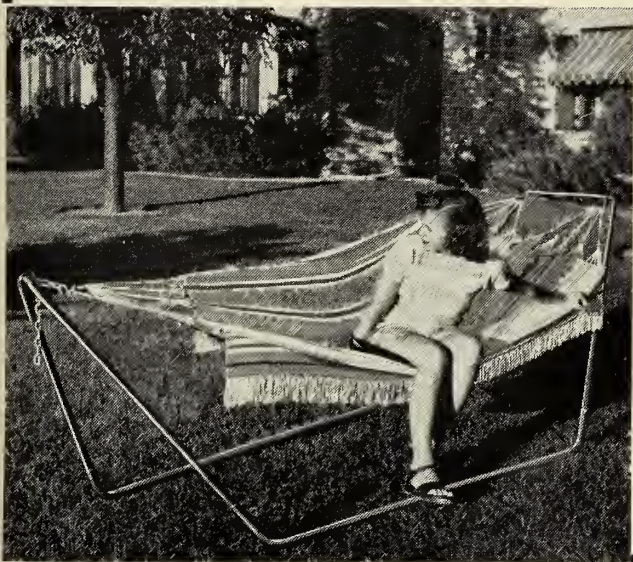
During the past 25 years, they said, a library of some 6,500 electrocardiographs has been assembled by their company, and a review of statistics discloses a better than expected mortality rate among those persons whose cardiographs clearly showed the existence of crippled or diseased hearts. On the basis of these findings it has been possible to revise certain underwriting practices.

The company has followed the experience of those persons who were granted insurance, as well as those who were unable to qualify. Among the latter group were many who had a far better mortality than was expected at the time they originally applied for insurance protection.



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## ABSTRACTS FROM CURRENT LITERATURE

### Ulcer Simulating Pyloric Stenosis

*Gastric Ulcer of the Pylorus Simulating Hypertrophic Pyloric Stenosis.* By R. C. Cole, *Ped.*, 6:6, 897-907, Dec., 1950.

Peptic ulcer in infants was first described by Cruveilhier in 1929. In 1941, Bird, Limper and Mayer published a comprehensive review of 245 cases of peptic ulcer in infancy and childhood which they gathered from the medical literature up to that time.

Etiological factors seem to be bacterial infection, suppurative or tuberculous meningitis, nonspecific gastritis, following burns or scalds, direct epigastric trauma, local anoxia and digestion by gastric juice, marasmus with lowered resistance of the gastric mucosae. Thirty-seven per cent of the cases occurred in infants under one year of age.

In many cases there is no indication of gastric ulcer, and diagnosis is made only at autopsy. If melena appears, outside sources of blood must be ruled out, e.g. baby's nose, mouth or mother's nipple. In the newborn, hemorrhagic disease, syphilis, sepsis, hemophilia, leukemia, thrombocytopenic purpura and congenital fibrinogenopenia must be ruled out.

In infants, this may be difficult to distinguish from pylorospasm, hypertrophic pyloric stenosis, gastroenteritis and intestinal obstruction, and one must consider intussusception, polyposis, anal fissure, Meckel's diverticulum, intestinal duplication, intestinal parasites, neoplasms and Banti's syndrome, acute or recurrent appendicitis, worms, teething, neurosis or allergy.

The stool and vomitus should be examined for blood, a tube or thread should be passed and removed after marking the point opposite the upper avleolar ridge, and the guaiac test for blood is done.

A flat plate of the abdomen must be taken to rule out perforation or obstruction. Roentgenograms of the stomach following barium meal may be made. Assay of gastric acidity following a test meal of histamine injection is unsatisfactory as a diagnostic aid in young infants and children.

As in adults, the treatment of uncomplicated cases consists of a dietary regimen with the addition of alkaline preparations. Where obstruction, perforation, or persistent severe abdominal pain is present, surgical intervention is indicated.

In a series of 31 cases of peptic ulcer in infants under two years of age, 28 terminated fatally. Where peptic ulcer has been recognized in this age group and proper therapy given, infants have recovered in a few instances.

In older children the prognosis was more favorable. Of 50 cases occurring in children between two and 15 years, 34 were males and 16 females. There were 42 with duodenal ulcer and eight with gastric ulcer. Forty patients survived with medical and surgical treatment. Thirty-four of the patients showed roentgen evidence of ulcer. Melena and abdominal pain were frequent symptoms.

A case of gastric ulcer simulating hypertrophic pyloric stenosis is presented.

From a summary of coexistent disease found in the autopsy cases at the Babies Hospital and reports from the recent literature, it would appear that diseases of the central nervous, gastrointestinal and respiratory systems are commonly present in cases which have shown peptic ulcer at autopsy.—D.R.D.

### Bell's Palsy

*The Treatment of Bell's Palsy with Histamine.* By D. A. Skinner, *Ann. Oto., Rhino., and Laryng.*, 59:1, 197-203, Mar., 1950.

Bell's palsy, commonly called rheumatic facial paralysis or refrigeration palsy, is a peripheral paralysis of the facial nerve due to vasospasm of the stylomastoid artery, its branches, and anastomoses. The vasospasm is primary; however, the occurrence of edema of the nerve may cause further compression, thus complicating the vasospastic picture.

Among other causes of peripheral paralysis of this nerve are constitutional, exanthematous and virus diseases; focal infections; hemorrhage; tumors, surgical procedures in the region of facial nerve; and trauma. Peripheral paralysis resulting from any of these conditions is not Bell's palsy. However, Bell's palsy is the most common type of peripheral paralysis.

The onset of the paralysis is usually sudden. The close proximity of the facial nerve and the stylomastoid artery to the canal wall probably accounts for the suddenness of paralysis in some individuals after exposure to cold. In many cases, the patient wakes up in the morning with the paralysis, which is often first discovered by looking in the mirror. This condition usually occurs in an otherwise healthy individual but in some cases a slight cold or an acute infection precedes the onset of the paralysis.

The exciting factor appears to be exposure to cold in about 70 per cent of the cases. Some follow severe emotional upsets but, in many cases, the exact precipitating factor remains unknown.

Bell's palsy is usually unilateral. Nicol has reported one bilateral case. Textbooks consider this to be rare. Most cases of facial diplegia that have been described are not Bell's palsy.

At the onset, pain may or may not be present. Involvement is usually worse where the pain is severe and of long duration and, if present, is usually



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#### From The Literature

- Bubert and Cook, Bulletin of School of Medicine, Univ. of Maryland, Vol. 32, pp. 175-190, 1948.
- Paul and Montgomery, J. Iowa State Med. Soc., June, 1948.
- Krantz, Holbert, Iwamoto and Carr, J.A.Ph.A., Vol. 36, pp. 248-250, 1947.
- New and Non-official Remedies, 1950, p. 285.



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within the ear, in the temple, mastoid regions and at the angle of the jaw. It is usually of a vasodilating character, but in a few cases it may be similar to the pain of a geniculate neuralgia. The duration of pain, if present, is usually three or four days and seldom over 10 days, but may last for a longer period.

It must be remembered that a small part of the facial nerve is sensory. As the block approaches the geniculate ganglion, pain may be present affecting the sensory component of this nerve, giving pain in the eye, temple, cheek, and in the mastoid region. This is a chronic deep-seated pain, which may last for several hours or days without subsiding. Geniculate ganglion neuralgia often follows Bell's palsy.

Females are affected more frequently than males because, as a rule, they are subject to more vascular disturbances.

More left facial nerves are affected than right. The right ear, as a rule, is more protected than the left while sleeping or driving a car.

Diplacusis occurs when there is involvement of the stapedial nerve. An increased hearing sensitivity and discomfort to certain loud noises are experienced following paralysis of the stapedial muscle. Perversion of taste takes place on involvement of the chorda tympani. One, both, or neither of these nerve branches may be affected. Diplacusis and loss of the sensation of taste, if present, usually persist for only a few days. This early restoration is probably due to a more abundant collateral blood supply which is present near the knee of the nerve.

The authors of many textbooks and articles have considered Bell's palsy to be due to neuritis, secondary to a focus of infection, while others have thought that it might be due to a virus. Foci of infection may or may not be present and, if so, the treatment of the same does not seem to alter the paralysis. Ballance and Duel have considered it to be a neuritis with edema and they have advocated early decompression and slitting the nerve sheath.

Kettel has considered this condition to be a vascular disturbance of the *vasa nervorum* where the blood supply of the nerve has been blocked. On the basis of 50 cases, he found that in 56 per cent the nerves were unquestionably edematous, in four per cent possibly atrophic, and in two per cent the continuity of the nerve has been interrupted.

Histamine diphosphate is one of the best vasodilators. It increases the blood supply and helps to smooth out the vessels. The treatment was started in 19 cases of Bell's palsy by giving subcutaneous injections of histamine diphosphate every two or three days.

In 17 cases, treatment was started by using low-dose therapy, usually starting with 0.1 cc. of a 1:10,000,000 dilution and gradually increasing until the

optimum effective dosage was reached. When improvement occurred, we aimed to keep the patient on that amount with very little change of dosage.

Nicotinic acid is probably one of the most commonly used vasodilators. When this drug is transferred into an amide, vasodilation is brought about. Nicotinamide cannot be substituted for this use since it does not produce the necessary vasodilatation.

Dihydroergotamine tartrate is a sympathetic paralyzing agent that is commonly used for the treatment of migraine, histaminic cephalgia, and obscure head and neck pains. This drug gave considerable relief from pain in one of our cases.

In addition to vasodilating therapy, the following were advocated:

1. Mineral oil eyedrops.
2. Hot compresses and massage of the face with the fingertips from below upward, for five minutes three times a day.
3. Strapping of the face with cellulose tape or facial splints.
4. Treatment of the foci of other infections.
5. Electric stimulation given once a week, in the cases where there is not an early response.

In 16 cases, or 84 per cent, the rapidity of improvement was phenomenal. In this group, the shortest recovery occurred in four days, the longest in 48, and the average was 19 days.

The paralysis recurred in two patients when dosage was increased above the optimum effective amount. However, complete restoration took place when the proper effective dosage was again repeated. In one case, paralysis did not recur when the dosage was increased far above the optimum effective amount. Following complete recovery in another case 50 mg. of pyribenzamine caused a slight recurrence of the paralysis.

The results obtained in the treatment of Bell's palsy with vasodilators have been encouraging. Although these observations have been made in only 19 patients, the results were so striking that the effect of this type of therapy appears unquestionable.—E.L.G.

\* \* \*

### Loeffler's Syndrome

*Pulmonary Infiltration and Blood Eosinophilia in Children (Loeffler's Syndrome).* By Rosa Nemir, Arthur Heyman, J. D. Gorvoy, Edmund Ervin, *Jnl. Ped.*, 37:6, 819-844, Dec., 1950.

In 1932 and again in 1936 Loeffler described a syndrome characterized by transitory pulmonary infiltrations, eosinophilia, and a benign course with few symptoms. Some have more severe symptoms with prolonged course. Possibly there is allergic background and association with intestinal parasites. The authors discuss three types of this disease.



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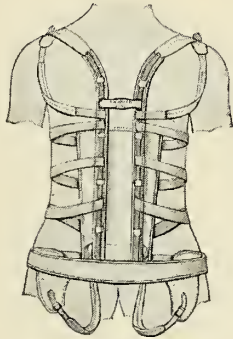
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### Study of Hormones in Psychoses

A study of the merit of ACTH, cortisone and similar hormones in the treatment of psychoses will be made in a cooperative project sponsored by the National Institute of Mental Health of the Public Health Service and the Worcester Foundation for Experimental Biology, Shrewsbury, Massachusetts. Recent evidence points to a relation between the hormones and mental illness.

The new investigations will be primarily concerned with the study of differences between the output of adrenal cortical hormones in schizophrenic patients and in well persons. New techniques of hormone analysis used by the foundation promise to reveal facts about specific chemical mechanisms that may help explain certain types of mental illness.

I know of no greater fallacy, or more widely believed, than the statement that youth is the happiest time of life. As we advance in years we really grow happier, if we live intelligently. The universe is spectacular, and it is a free show. Increase of difficulties and responsibilities strengthens and enriches the mind and adds to the variety of life. To live abundantly is like climbing a mountain or a tower. To say that youth is happier than maturity is like saying that the view from the bottom of the tower is better than the view from the top. As we ascend, the range of our views widens immensely; the horizon is pushed farther away. Finally, as we reach the summit it is as if we had the world at our feet.—William Lyon Phelps.

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- Internal Medicine.* Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3. Written, various centers, Oct. 15.
- Obstetrics and Gynecology.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6. Written, Feb. 1, 1952. Final date for filing applications is Nov. 1.
- Ophthalmology.* Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine. Written, Feb. 4-5, 1952, 25 centers. Oral, Oct. 8-13, Chicago.
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- Plastic Surgery.* Sec., Dr. Bradford Cannon, 330 Dartmouth St., Boston.
- Preventive Medicine and Public Health.* Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore. Written, Oct. 28, San Francisco. Oral, Oct. 29, San Francisco.
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- Surgery.* Sec., Dr. J. Stewart Rodman, 225 South 15th St., Philadelphia. Written, various centers, October, 1951. Final date for filing applications is July 1.
- Thoracic Surgery.* Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit.
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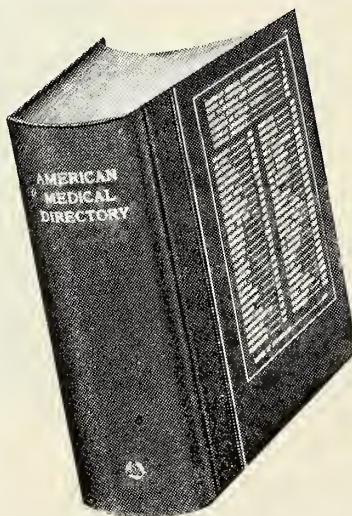
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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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July, 1951

No. 7

## Bronchial Asthma from a Therapeutic Point of View

John K. Fulton, M.D.

Wichita, Kansas

Bronchial asthma continues to be one of the major chronic illnesses, along with arthritis, pulmonary tuberculosis, and heart disease, which annually cause the loss of thousands of man-days in time lost from school or work, or which are responsible for a state of persistent loss of economic efficiency of the person afflicted. It is important to think of this disease not only in terms of acute attack, but also as a frequently chronic disease in which all measures directed to rehabilitation are justified in terms of the economic benefit to the patient and society.

From time immemorial, numerous remedies have existed for the treatment of bronchial asthma. From the tremendous list of drugs promoted for the treatment of this disease, the actually best or most useful or most effective drugs are few in number. As to specific desensitization, considerable confusion exists in the minds of many physicians as to which types of sensitivity are amenable to desensitization therapy and which are not. Because of the promotion of ill-advised desensitization based on faulty specific diagnosis and attempts at desensitization to antigens which are more practically eliminated, considerable skepticism has arisen in the minds of doctors, as well as patients, as to its actual value in any of those situations where it is indeed really indicated. In the following, the author will attempt to set forth what he believes is the most practical and efficient treatment from the economic, as well as the academic point of view, for each of the various types of bronchial asthma encountered in clinical practice.

*Chronic Juvenile Asthma.* This type is almost always allergic in origin, due to extrinsic protein sensitivity, with a strong likelihood that the specific etiology, such as foods, danders, mold, house dust, or miscellaneous inhalant can, with patience, be found and eliminated, or that desensitization in the case of house dust or molds will be effective. Paradoxically, identification of the allergens in such cases is easiest when the disease is most severe and

chronic. Most difficult are the cases in this group who have asthma associated only with respiratory infections, and whose attacks are so short-lived that a satisfactory elimination program can never be carried out. In the chronic persistent case, the beneficial result of a sweeping elimination of many possible allergens is often dramatic. It is then relatively easy to obtain the cooperation of the patient and his family in running down the final answer.

*Seasonal Pollen Asthma in Children and Adults.* Too frequently this type is first seen during the height of the pollen season in a person who has had severe hay fever for many years. Reliance has been placed on the various antihistamine drugs in times past. With the growing severity of the allergic sensitization ("those drugs have worn out on me") asthma appears, and the patient and his physician are dismayed that while the nasal symptoms, which often responded quite well to antihistamines in the past may continue to do so, the asthma is not noticeably affected. Or the nasal symptoms may have progressed to the point where even these seem unaffected by the antihistamines. Relief by adrenalin or other drugs is often only a fair compromise. In past times these patients made desperate and expensive pilgrimages to various geographic outlands in an attempt to obtain relief, or remained totally disabled economically for a period of weeks during the pollen season.

When seen for the first time during such a severe seasonal attack, the comfort of the patient as well as his economic situation seems to justify the immediate use of ACTH or cortisone. The results are fortunately often dramatic. In some instances four days of treatment at the height of the season eliminates all symptoms until the next season. Alternative care, such as co-seasonal desensitization, is seldom effective. The drawback inherent in hormonal treatment is of course its temporary effect. It remains to be seen whether ACTH and cortisone will not, like the antihistamines, be a source of dis-

appointment in future seasons, when the underlying sensitization has progressed in severity to the point where such non-specific treatment is no longer effective.

For the long term control of these symptoms, the best treatment, and probably in the long run the most economical, remains the perennial or pre-seasonal pollen desensitization method. Complete abolition of nasal and asthmatic symptoms by this method is not always possible. Still, the asthma is usually relieved entirely and the nasal symptoms improved to the point that antihistamines are again effective. The patient is thoroughly educated in the nature and care of his disease, and given the prospect of eventual permanent control.

*Intrinsic Asthma (Asthmatic Bronchitis; Infectious Asthma).* This type of asthma has always been the bugaboo of the physician. While not always severe, its chronicity alone makes it disabling, and with long continued symptoms, pulmonary emphysema and pulmonary fibrosis may permanently cripple the lung so that all therapy is ineffective. It can be identified from the history alone in most instances by the absence of an allergic family history, absence of hay fever, asthma or atopic eczema in youth, and absence of clear cut extrinsic factors in the etiology or periodicity of the symptoms. The patient is usually over 30 and almost always over 40 when his symptoms first begin. He identifies changes in weather, respiratory infections, irritant fumes or dusts, certain drugs, and psychic factors as important precipitating causes of his attacks. Skin tests when properly performed are usually negative. Elimination regimes prove to be of no value except insofar as respiratory tract irritants are reduced.

This patient has a number of favored remedies. Ofttimes heavily addicted to adrenalin, he has narrowed down his therapeutic regimen to stoical acceptance of his disease plus the use of symptomatic remedies. While these drugs make life bearable, the symptoms persist and the secondary lung disease persists. Eventually this patient may become permanently disabled by the crippling effects of his asthma or may go into the inexplicable remissions which occasionally occur.

This patient promises more than any other to profit by the use of ACTH and cortisone, given in an individualized fashion, with the intent not only of relieving symptoms but of preventing further lung damage. Some such patients are best controlled on intermittent courses of high dosage. Others do best on smaller maintenance doses. The physician has the responsibility not only to relieve the presenting attack but to insure that so far as possible the disease is suppressed at an innocuous level.

Should the patient balk at the cost of the drug, it should be pointed out to him that time lost from employment or reduced efficiency in employment costs more than the drug itself.

A word more about desensitization. Enthusiasm for this method of treatment reached its heyday in the aftermath of the period when immunotherapy was making such rapid advances. It would appear now that there has developed among many physicians, as well as laymen, a certain skepticism toward the value of "shots" in hay fever and asthma. The reason for this is no doubt the equivocal results which have followed desensitization programs not carefully suited to the problem at hand and without proper understanding by the physician of the limitations of this type of therapy.

While desensitization has been attempted to almost every known allergen, those which are best suited to this management are relatively few in number. These are practically limited to the seasonal pollens, the molds, and house dust. Desensitization to feathers and animal danders is usually ineffective as well as unnecessary. Desensitization to house dust as the only therapeutic attack on dust sensitivity is seldom helpful. On the other hand, undue importance attached to a weak reaction to house dust resulting in a long desensitization program has often been a source of disappointment, because the house dust was not the significant allergen responsible in the beginning. Desensitization to foods is now seldom used.

In Kansas, the seasonal pollens of clinical importance are; 1. the grasses, 2. the chenopod-amaranths; Russian thistle, pigweed, Kochia, 3. the ragweeds, 4. the sages, and 5. the trees. Except for the latter, these antigens are quite antigenically similar within each group, for which reason skin tests for significance tend to be positive to all other pollens within that group. Where skin tests do not clearly show group as well as single pollen sensitivities, the probability is very great that: 1. the test is in error, or 2. the clinical sensitivity of the patient is insufficient to account for the symptoms.

Furthermore, positive skin tests, even when convincing by the above criterion, are not alone an indication for inclusion of that antigen in the treatment mixture unless the clinical history indicates significant clinical sensitivity, for the addition of unnecessary antigens to the mixture simply reduces the patient's overall tolerance to other more significant antigens in the prescription.

To summarize, desensitization should be: 1. limited to those antigens where experience has shown that this is both effective and safe, and 2. limited only to those antigens to which the patient is clin-



ically sensitive as borne out by both history and valid skin tests.

Where symptomatic treatment alone is indicated, the following drugs are the old reliables. The drug houses notwithstanding, there have been few important additions in 25 years.

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4. Isuprel: (Aludrine; Norisodrine)  
Sublingually a convenient, rapidly effective remedy for milder attacks.  
By aerosol, with the same precautions as for adrenalin
5. Ephedrine:  
In combination with sedatives
6. Sedative:  
Chloral hydrate and paraldehyde seldom sensitize.  
Barbiturates usually safe.  
Opiates never indicated and decidedly dangerous.
7. Antibiotics:  
Where infection is superimposed on and adds to the mucous membrane edema and exudation.

#### Drugs and Treatments which are Not Reliable or Useful:

1. Antihistamines:  
Effective in hay fever. They are usually not effective in asthma, and may promote

formation of mucus plugs through their drying effect on the bronchial mucosa.

2. Orthoxine:  
A weak ephedrine clinically.
3. Calcium:  
Its oral use is not based on reliable evidence that the blood calcium can be altered by this route, nor that asthma is in any way related to disturbed calcium metabolism. Intravenously its effect is evanescent.
4. Vitamin C:  
No reliable evidence for value.
5. Thyroid or other hormones other than ACTH and cortisone.
6. Irradiation of the lungs with x-ray:  
Only temporary in its benefit and possibly hastens the fibrotic changes in the lungs which normally result from the disease itself.
7. Pulmonary sympathectomy:  
Not a permanent or generally accepted cure at the present time.
8. Psychotherapy:  
Not at the present time a practical or soundly based primary approach to the problem.

#### Conclusion

1. Indications for the various modes of treatment for hay fever and bronchial asthma are outlined in terms of the various clinical types of these diseases and the stage at which they are encountered.
2. The treatment selected should be based on economic as well as theoretic considerations, with the object in mind being to choose the approach which will result in the best long, as well as short, term adjustment of the patient to his disease.
3. The cost of any treatment of these diseases, particularly bronchial asthma, should be weighed against the cost of the disease itself. In the case of hay fever, due attention should be paid to the fact that it is so frequently a forerunner of bronchial asthma.

93rd Annual Session  
KANSAS MEDICAL SOCIETY  
Kansas City, Kansas      April 27-May 1, 1952

# Encephalitis in the Midwest: I. A Review of the Problem\*

T. Aidan Cockburn, M.D., Edmund R. Price, D.V.M., and John A. Rowe, Ph.D. \*\*

Kansas City, Kansas

## Introduction

Large epidemics of encephalitis in horse and man have occurred in the states of the Missouri River Basin. Major epidemics of St. Louis encephalitis occurred in 1933 and 1937 in the city and county of St. Louis, Missouri, and of western equine encephalomyelitis in 1941 in North and South Dakota, Minnesota, and Nebraska. The equine epizootics (such as the "Kansas-Nebraska horse plague" in 1912 and those of 1937 and 1938, affecting the whole midwest) involved vast numbers of animals.

In 1948 studies on the encephalitis problem in the midwest were begun by the Encephalitis Investigations Unit of the Office of Midwestern Communicable Disease Center Services, Kansas City, Kansas. The objective of these studies is the clarification of the epidemiologies of the arthropod-borne virus encephalitides in the hope that when the means of maintenance and transmission of the viruses in nature are known, some practical means of dealing with them may be found. The study area consists of the ten states of Kansas, Iowa, Missouri, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Colorado, and Wyoming.

## Infections Present In the Area

Of the virus diseases termed the arthropod-borne encephalitides, only those of western equine encephalomyelitis and St. Louis encephalitis have been reported from this area. Other viruses present which are capable of producing the symptoms of en-

cephalitis in man include lymphocytic choriomeningitis, poliomyelitis, herpes, and mumps. Clinically the diagnosis of encephalitis is very difficult, and indeed the naming of the specific infections cannot be made without complicated laboratory tests undertaken either to isolate the causal virus or to demonstrate a rising titre of antibodies.

Figure 1 shows the number of reported cases of "acute infectious encephalitis" in the 10-state area since 1933, together with that of the equine cases of encephalomyelitis since 1935. The major portion of the human cases which occurred in 1933 and 1937 were due to epidemics of St. Louis encephalitis which occurred mainly in Missouri; those of 1941 were due to the western equine encephalomyelitis in the northern states of the area.

## St. Louis Encephalitis

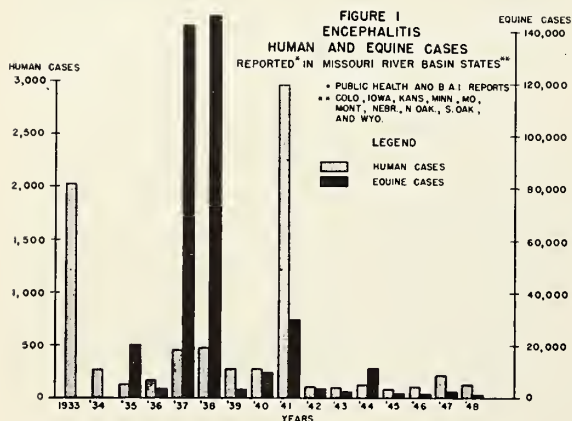
Before the isolation of the causal virus in 1933, St. Louis encephalitis was not specifically recognized. In 1933 encephalitis appeared in epidemic form in and around St. Louis with smaller foci in Kansas City, St. Joseph and Columbia, Missouri, as well as in Illinois and Kentucky. The epidemic was investigated by a commission<sup>1</sup> and the causal virus was quickly isolated. An outbreak in 1932 in Paris, Illinois, was recognized in retrospect.

Hartmann<sup>1</sup> reviewed the cases of all central nervous system infections admitted to the Children's Hospital at St. Louis for the years 1915-1933, and found 40 of them to be clinically indistinguishable from St. Louis encephalitis. He concluded that the disease was endemic in the city long before the 1933 epidemic appeared.

According to Broun et al<sup>2</sup> little, if any, summer encephalitis was evident in the St. Louis area in the years 1934-1936.

In 1937 an epidemic occurred in the St. Louis area. This epidemic was not reported fully, but according to Broun et al<sup>2</sup> St. Louis virus was recovered from one case. Blattner and Heys<sup>3</sup> have stated that there was a total of 750 cases; records of the City Health Department give details of 450 cases in the city. The epidemic began about the middle of August, reached a peak in the middle of September, and faded out in October.

In 1938 Smith, Lennette, and Blattner<sup>4</sup> reported 10 cases of acute encephalitis from St. Louis. All the cases were examined serologically; however,



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none of them showed specific antibodies to the St. Louis virus.

No large scale epidemic of St. Louis encephalitis has occurred since 1937, but every year clinically diagnosed cases are discovered in the environs of St. Louis. From 1939 to 1944, 66 cases were reported from the St. Louis Children's Hospital by Blattner and Heys.<sup>3</sup> Twelve of these were shown by antibody tests to be due to St. Louis virus.

In 1943-1944 Smith et al<sup>5</sup> carried out a serum survey for evidence of infection with St. Louis virus, using the neutralization test. Of 97 people who had been residents in St. Louis County through the epidemic years, 1933-1937, 37 per cent showed antibodies against St. Louis virus. In some sections of the country the serum of approximately 50 per cent of the residents contained antibodies against St. Louis virus. On the other hand, of 56 who had come to this country after 1937, only three showed antibodies.

Since 1944, according to Hartmann,<sup>6</sup> physicians in the Children's Hospital in St. Louis have made clinical diagnoses of small numbers of encephalitis cases each year from residents of both the city and the county.

Apart from the 1937 epidemic, St. Louis encephalitis has been rarely reported in the midwest outside of the city and county of St. Louis. Human infection with this virus is undoubtedly much more widespread than reports indicate because antibody against the virus is being found in widely scattered localities in the area. Reports of these include Minnesota by Eklund,<sup>13</sup> and in Colorado by Philip, Cox, and Fountain.<sup>10</sup>

#### Western Equine Encephalomyelitis

In 1937 and 1938 a number of human infections of the western equine encephalomyelitis virus were diagnosed by antibody tests in Minnesota by Eklund and Blumstein,<sup>7, 8</sup> and in North Dakota in 1938 by Breslich, Rowe, and Lehman.<sup>9</sup> Two years later in Colorado, Philip, Cox, and Fountain<sup>10</sup> showed the presence of antibodies against this virus and also found<sup>11</sup> a focus of encephalitis of an unidentified type in Larimer and Weld Counties.

The virus was isolated in Kansas in 1940 from the bloodsucking conenosed bug *Triatoma sanguisuga* by Kitselman and Grundman.<sup>12</sup>

In 1941 the largest human epidemic of western equine virus to date occurred, nearly 3,000 cases being reported, chiefly from North and South Dakota and Minnesota. Eklund<sup>13</sup> reported that 46 per cent of 857 cases investigated in Minnesota had antibodies to the virus in their sera; a small percentage were found to have antibodies to the St. Louis virus. Furthermore, he indicated that the disease was primarily a rural one. During the epidemic,

virus was recovered in North Dakota from a prairie chicken and a deer by Cox et al<sup>14</sup> and in Iowa from a hog by McNutt and Packer.<sup>15</sup> The horse population also was involved and, as in some other epidemics, it was noted that the horse epizootic preceded the human one.

In 1943 in the course of investigations by Hammon, Reeves, and Galindo in eastern Nebraska,<sup>16</sup> over 10,000 mosquitoes and 1,200 bedbugs were tested for neurotropic viruses, and western equine encephalomyelitis virus was isolated from one pool of 67 *Culex tarsalis* mosquitoes out of a total of 631 caught. No positive human cases were found and it would appear that infection in humans and animals in eastern Nebraska in 1943 was minimal.

Investigations of small outbreaks of unspecified encephalitis were made in eastern Kansas in 1946-1947 by Wenner,<sup>17</sup> who was unable to establish a specific diagnosis.

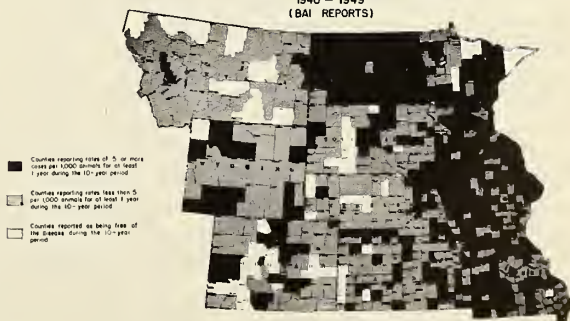
Since 1941 no large scale epidemics have been reported, although localized outbreaks occur every year in one or more areas of the Missouri River Basin states. Such outbreaks were investigated in Garden City, Kansas, in 1948 and in North Dakota and Colorado in 1949. These will be reported in subsequent papers.

#### Equine Infections

There are numerous reports by veterinary scientists dating from about 1850, referred to by Meyer<sup>18</sup> and the Botulism Commission,<sup>19</sup> which indicate that many extensive epizootics occurred during the latter part of the 19th century and periodically during the early years of the 20th century. The severity of these early epizootics is emphasized in reports describing such losses as 35,000 equines in Kansas and Nebraska in 1912; 1,000 in Colorado in 1919; 18 outbreaks involving 1,004 animals in Montana in 1919, and 1,500 in South Dakota in 1918.

The number of horse cases reported for the 10-

FIGURE 2  
EQUINE ENCEPHALOMYELITIS  
IN  
10 MIDWESTERN STATES  
1940 - 1949  
(BAI REPORTS)



state area per year has steadily dropped since the severe epizootic of 1937 and 1938 (Figure 1). This can be partially accounted for by the reduction in the horse population from about 3.9 million in 1933 to about 1.2 million in 1949, and by the large numbers of horses immunized against western equine virus following the epizootics of 1937 and 1938. Although there has been a reduction in the total number of reported equine infections since 1937, western equine encephalitis virus is still prevalent in the midwest. Rates of equine infections during the period 1940-1949 are indicated on Figure 2.

In 1933 Willett<sup>1</sup> produced evidence that the mule might be susceptible to St. Louis virus; this was confirmed in 1940 by Cox, Philip and Kilpatrick.<sup>20</sup> Philip, Cox, and Fountain<sup>10</sup> working in Weld County, Colorado, found that of 14 horses with symptoms, seven had St. Louis antibodies and only two had western equine antibodies.

#### Discussion

The virus encephalitides are endemic in states of the Missouri River Basin. Sizable epidemics due to both the western equine and St. Louis viruses have occurred and local outbreaks and sporadic cases occur annually in widely scattered parts of the basin.

From the point of view of both the practicing physician and the research worker, the infections grouped under the title of encephalitis present many unsatisfactory features. Clinical diagnosis is extremely difficult, and these infections are confused with many other diseases, especially poliomyelitis, lymphocytic choriomeningitis, and cerebral vascular disorders. In addition, few laboratories in the midwest are equipped to perform diagnostic work on encephalitis, and those that have the facilities for such work are not prepared to test specimen material on a routine basis. Although laboratory tests are the best available means of diagnosing specific encephalitic diseases, they are far from satisfactory. A significant percentage of cases exhibiting encephalitic symptoms fail to respond to known tests.

There is no specific treatment, any medication being for symptomatic relief only, so that the handling of a patient is largely a matter of careful nursing. The death rate in epidemics of western equine encephalomyelitis and St. Louis encephalitis appears to be between five per cent and 20 per cent and a num-

ber of the patients who survive have residual paralysis or personality changes. There is no satisfactory method of prevention of infection, although preventive inoculation is available for people exposed to undue risk, and anti-mosquito precautions are advisable under certain circumstances.

#### Summary

1. Two of the arthropod-borne virus encephalitides, western equine encephalomyelitis and St. Louis encephalitis, are endemic in the midwest, and have occurred in the past in epidemic form. Both humans and equines have been affected.

2. Encephalitic diseases are very difficult to diagnose and laboratory assistance in this is inadequate in the midwest.

3. The Encephalitis Investigations Unit of the Office of Midwestern CDC Services is engaged in long-term investigations into the epidemiologies of these viruses in the hope of discovering some practical method of control.

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## The Handling of Casualties\*

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Washington, D. C.

No civil defense function presents more potential personal concern than the handling of casualties. Damaged or lost property generally can be replaced or else forgotten heroically, but far more demoralizing would be death, physical suffering, personal misery, and grief caused by loved ones' injury, or their undetermined whereabouts or condition. Although individual concern in such instances is of vital importance to the nation, it must not be confused with those problems of national survival related to our methods of handling casualties.

Regardless of our individual sympathies and emotions, modern war is calculated, cold realism and may result in utter disregard for dignity of the individual. Hence efforts at destruction or survival might submerge the rights of individuals. On the other hand a temporary loss of individual right in favor of national survival efforts might enhance the future of free citizens. As an example the successful handling of a maximum number of civilian casualties rather than ideal treatment of individuals may tip the balance over towards maximum chances of survival. This has been confirmed by military medical experience which has proved that nothing enhances the will to fight, or to survive to return to the fight, like prompt, adequate treatment for the largest number of casualties. This objective of civil defense fits into a necessary goal of national manpower maintenance.

A few changes in existing medical systems required to handle peacetime casualties could consist of improving preventive efforts, compliance with reasonable and known rules of safety, accident prevention techniques, and increased efficiency in management of medical resources. On the other hand, war-produced casualties would necessitate many changes in our usual, peacetime existence. For one thing the qualitative aspect or skill of our manpower must be enhanced, or reestablished where damaged, even more so than quantitatively. Our emergency medical services would have to increase their own qualitative manpower factors while releasing quantity to the armed services and other approved demands.

One more evidence of the significance of casualties may be found in a recent interesting statement

that no more than four to six per cent of a total population can be lost if a nation is to survive unconquered.<sup>1</sup> However this data may have neglected the fact that past casualties belonged more to military segments of populations than to civilians under attack. No one knows the maximum quantitative or qualitative tolerance of civilian casualties.

Our potential civil defense casualty problems are established geographically. More than half our population is concentrated in 168 "metropolitan areas" (an area is based upon one city of 50,000 or more people), where four-fifths of our population increase during the last 10 years occurred at a rate of 21.2 per cent, as compared with 5.7 per cent for the rest of the country. One metropolitan area, New York City, has more people than all of New England or any one of 45 states, while there are 15 states with fewer than a million each. There are 90 areas with 200,000 or more, a likely minimum critical target area for atomic bombs,<sup>3</sup> and 150 with 100,000 or more. It would be unusual for smaller communities to be attacked. Hence we may consider that no more than 150 cities, probably fewer, would be reasonable target areas. Other designated critical target areas are "industrial-metropolitan areas," the most profitable targets for an aggressor,<sup>4</sup> usually having 40,000, and "industrial areas" with 20,000 or more industrial workers each. The metropolitan areas contain most of our medical resources.

Future wars will be won by the producing population. Hence the mission must be health conservation rather than therapeutic medicine. A realistic nation would be compelled to give priority for health services, in order of importance to its survival, to the on-duty industrial-agricultural population, the rest of the nonsick, and then to casualties. However, the casualties likely would include many industrial workers, who would have to be rehabilitated and returned to work promptly.

All communities are not likely targets, hence the missions of various communities differ as greatly as their hazards. For example, a recognized authority stated<sup>5</sup>:

"I should like to emphasize my own personal view on the importance of keeping a proper perspective in civil defense activities. The atom bomb has added a new factor to be reckoned with in modern warfare, but it is not sound thinking to over-emphasize the role atomic energy will play

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in any future war to the exclusion of planning for emergency medical support against conventional block busters and fire bombs or such unconventional forms of warfare as bacteriological and poison gas."

All cities need not prepare scientifically for atomic bombing, high explosives, incendiaries, guided missiles, or chemicals directed against them. But every metropolitan area must know what to do or not do. The efficiency and economy of a casualty-handling service will depend upon a proper balancing of application of knowledge and means to the military planner's quintuplets of "what, when, where, who and how." Since success in each of these five planning fields is so essential to the welfare of a future individual casualty, we must examine them.

There are three "whats," the first of which is a question as to what types of services are involved. There is the matter of maintenance of war production by means of essential health services for war-industrial workers<sup>6</sup> and for the sick of the rest of the noncasualty population, the latter comprising usually about two per cent of the people. There must be an immediate response by any attacked community or communities in the form of self-help,<sup>7, 9</sup> and aid to other communities by those which may have been not attacked. This would be achieved by sending medical teams and supplies,<sup>10</sup> receiving and caring for casualties from another community, or receiving and caring for mass-evacuated populations with or without casualties.<sup>11</sup>

A second question of "what" comprises the types of living casualties to be expected. Far too much attention has been expended on the dead, awesome as past experiences may have been in this matter. Living casualties would comprise the usual community casualties due to injuries which would occur during war as well as in peacetime. The other casualties would be the war-produced civilian casualties, of traumatic, thermal, radiation, chemical, infectious or mental origin, varying quantitatively according to

- Population densities
- Prevailing construction
- Education and mental capacities of the population
- Intensity and force of attacks
- Time of attacks
- Spread of attacks in duration and in space
- Behavior of the population and its leadership.

The last "what" has to do with types of activities necessary to a casualties service, among which would be:

1. Organizational, for development, equipping, training, testing, assigning and managing the component elements.

2. Providing transport where and when required for casualty service personnel, casualties and medical supplies.

3. Providing means of medical service communications.

4. Assuring adequate nonmedical means essential to medical services and the care of casualties but not controlled by the medical services and not their responsibility except for advice to proper authorities as to quality and quantity required, and where and when.

5. Management, where and when required, over the following:

The flow of casualties, services, and supplies, by means of a medical regulating service.

Treatment of the casualties by finding, rescuing, collecting, sorting, transporting, and hospitalizing them.

#### Preparation and Maintenance of Applicable Records and Reports

The "when" cannot be foretold in peacetime, nature and fate being credited by many for determining the times for casualty production, perhaps unjustly at times. An enemy would select the "when" for producing war casualties in our communities. Factors, of interest to individuals, which might influence an enemy would be the time of day, day of the week, and season. Of interest to nations would be advantages accruing to an enemy-aggressor from political, psychological, and economic or industrial viewpoints, while some disadvantages to a nation attacked would be high population density, climatic hazards, psychological states at the time of attack.

The "where" factor could involve neighboring nations as well as our own. An enemy would determine not only this but also the specific local communities selected for attack. The community attacked would need to determine where casualties were to be handled, and would determine the organization of zones of activity.

"Who" will be casualties can be influenced very markedly by enemy activities as well as our own. Applicable to the former would be the time of attack, extent of warning period, nature and force of attack, while to the latter would be the status of prior administrative and passive defense arrangements achieved, and attitudes and behavior of our own population. Who will handle the casualties which would occur despite our best efforts prior to attack, and who will manage the planning and functioning of the organization constitute a large part of the remainder of this discussion, the "how."

The outstanding major objective of "how" to handle civilian casualties must be to provide medical



aid at the earliest possible moment after injury. Well-known success has been achieved in military medical services by advancing immediate medical aid ever closer to the place and time where the individual soldier may be injured, at the front, the incident area. As progress has occurred, the hazards and risks assumed by the medical service personnel have increased, but have resulted in no withdrawal or a deployment anywhere save in the areas expected to contain the maximum numbers and degrees of injuries. Equal success in civil defense medical services can be achieved only by accepting, then minimizing to the maximum possible degree, the risks taken by the civil defense casualties service personnel to equal those of the rest of the population. Importation of initial medical aid from the rear to the combat front only after casualty incidence would not achieve necessary military medical results. Unless more deaths and increased extent and time of suffering on the part of civilian casualties are to be tolerated, we will be equally unable to deploy comparable civil defense casualty service personnel in "safe" or peripheral areas only. The injured population will benefit by furnishing maximum protection to medical personnel in potential incident areas, hence the latter must be on the ground and ready to function. The risks must be minimized by increased passive defense measures, particularly reinforcement by construction, for medical aid stations, supply and personnel rendezvous points, and surgical and other hospital facilities



Figure 1. Organization for Handling Casualties Services.

ties required within a very few minutes after casualty incidence.

Just as essential an objective in our "how" is uniformity of organization. Economy of means and efficiency of operation will depend upon early and maximum achievement of uniformity for all self-help, for mutual aid and mobile support teams, for controls, communications, and for the procedures of each. Defining the basis is a central responsibility, implementing the organization is a decentralized, local responsibility.

Similarly, a third objective must be an early standardization of material means, along with maxi-

SERVICES REQUIRED AND AREAS		CONTINUOUSLY REQUIRED ESSENTIAL HEALTH SERVICES		PERIODICALLY REQUIRED CIVILIAN CASUALTY MEDICAL SERVICES		
		FOR INDUSTRIAL POPULATION IN WAR PRODUCTION	FOR REST OF POPULATION (NON-CASUALTY)	SELF-HELP	MUTUAL AID	MOBILE SUPPORT
SOME ATTACKED	CRITICAL TARGET AREAS	2	3	1	4	5
	NON TARGET AREAS					
	PARTICIPATING	1	5	4	3	2
	NON-PARTICIPATING	1	2	-	-	-
UNTIL SOME ATTACKED	CRITICAL TARGET AREAS	1	3	-	4	2
	NON TARGET AREAS					
	PARTICIPATING	1	2	5	3	4
	NON-PARTICIPATING	1	2	-	-	-

1.b.e 1. Usual Priorities—Civilian Medical Services To Be Assured for War. Priority diminishes with increasing numerals.

imum curtailment of the numbers and types of medical items involved in handling casualties. Standardization should be developed nationally.

The fourth essential "how" is specific designation in clear, brief, understandable terms, of the role of the state, of the community and of individuals for self-help, mutual aid, and mobile support. All individuals must be taught self-help and almost all except children must learn first-aid measures to provide for basic immediate care of casualties. Unless advised by competent authority to do otherwise all metropolitan areas should develop self-help, mutual aid, and mobile support teams. Some communities would provide self-help alone. A few communities might be directed to prepare for mobile support only. Many communities need to be advised soundly that they will have no active participation in the handling of casualties.

The last but extremely important "how" to be listed is the provision of means. Another common military planning formula may contribute to orderly thinking here, namely, the five M's of money, manpower, material, mobility, and management. Even if control over these is lacking an academic consideration of their application may be undertaken in an advisory manner. It goes without saying that practical limitations might influence competent civil authorities to vary considerably from our academic concepts presented here. Full individual and community support to them in such instances would be urged by no one more completely than by me.

Communities should determine their probable responsibilities before time-phasing efforts to develop their medical services for war (Figure 1), priorities for which would fit into a typical pattern (Table 1). Where casualties services will be required their relationships with other services essential to community conservation of health must be understood (Figure 2). In order to develop self-help, one must understand the detailed planning and implementation required.<sup>8</sup> This holds true also for mutual aid and mobile support.<sup>10</sup> This

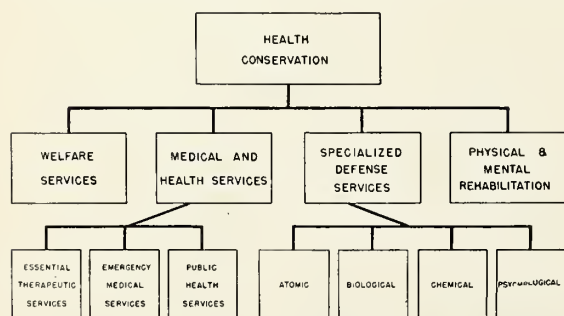


Figure 2. Services required for Handling Civilian Casualties in Civil Defense.

is not the place or time to review such matters in detail. These have been discussed broadly in recent official documents.<sup>12,13</sup>

What might result from the matters discussed so far? A metropolitan organization would be extremely complex, but understanding would come rapidly as the component elements were isolated, studied in detail, then their interrelationships learned (Figure 3). Although the whole system is based upon the hospital services, the maximum achievements will depend for the most part upon success or failure of the casualties services.

The aid station is the nerve center of the casualties services, the vital point where life-saving measures and initial prevention or reduction of suffering will occur. It is also the controller of activities designed to prevent, reduce, or alleviate shock, pain, infections, hemorrhages, and acute mental disturbances. Since it is so important the aid station must be well protected from damaging attacks by an enemy, even to a maximum degree, ready accessibility and entry and exit must be assured, and adequate staffing and equipment guaranteed. No doubt design for a modern standardized aid station will be developed soon. Meantime, except for revision to provide for increased difficulties, magnitudes, and hazards anticipated from atomic bombing, the functional design of World War II aid stations of acceptable type furnish us examples for study. The extensive problems of maintaining flow of casualties, detecting and handling contaminated casualties while treating them, as well as uncontaminated ones, prior to their disposition can be barely suggested here. These might be simplified by adopting a standard operating procedure, discussed here as an introduction to some functions of the aid station.

The aid station should:

1. Direct and supervise aid groups in their operations of finding, rapidly furnishing first aid to, collecting and moving, living casualties on to further treatment at aid stations or hospitals, or if necessary, directing them home or to duties.
2. Direct and supervise attached motor ambulance groups in their operations of casualty transport, to the station and to hospitals.
3. Maintain medical supply support of all assigned missions.
4. Coordinate medical services with skilled rescue groups' services.
5. Operate a collecting and clearing station for interim life-saving measures and transfer of casualties for further treatment as necessary. This is achieved by:

Reception of casualties by ambulation or from aid groups and motor ambulance groups.



Sorting of casualties according to nature and severity of injuries.

Classifying casualties under medical regulating system categories.

Supervising the decontamination of casualties who also would require treatment.

Administering treatment to save lives or reduce excessive suffering.

Preparing, maintaining, and transmitting appropriate records and reports.

Disposing of casualties to duty, home, convalescence, hospital, morgue, asylums, prisons, or homes for incurables, as prescribed by medical regulator.

In a general way actions would always be taken in approximately the same order for successive incidence. We should recall that the Chief of the Collecting Post Group directs activities of the Aid Station and Aid Groups as well as attached Ambulance and Decontamination Groups involved in the casualty treatments (Figure 3). Upon occurrence of an incident he should first make an immediate

estimate of his over-all problem in the area for which his group is responsible. This is one of the most important points for all to learn, in order that the personnel will not rush into unplanned and unwise attending of a few casualties to the disadvantage of the whole population affected. He will learn the likely numbers and disposition of casualties in general, imparting the information to his aid personnel and litter bearers. Coordinated action with skilled rescue groups will be valuable in this phase of action, as will information which should come to him rapidly also from police, fire, and other service sources, as well as from citizens. The deployment, availability and extent of undamaged services will be determined. With this in mind after a relatively small loss of time, the performance may start.

The next important activity will be tagging of patients to identify them, their origin, and the nature broadly of injuries sustained. This is extremely important because it will make or break the medical records and the reporting system.

### SUGGESTED METROPOLITAN ORGANIZATION FOR CIVIL DEFENSE HANDLING OF CASUALTIES (SCHEMATIC)

PREPARED BY COLONEL WILLIAM L. WILSON, MEDICAL CORPS, UNITED STATES ARMY, 15 JANUARY 1951

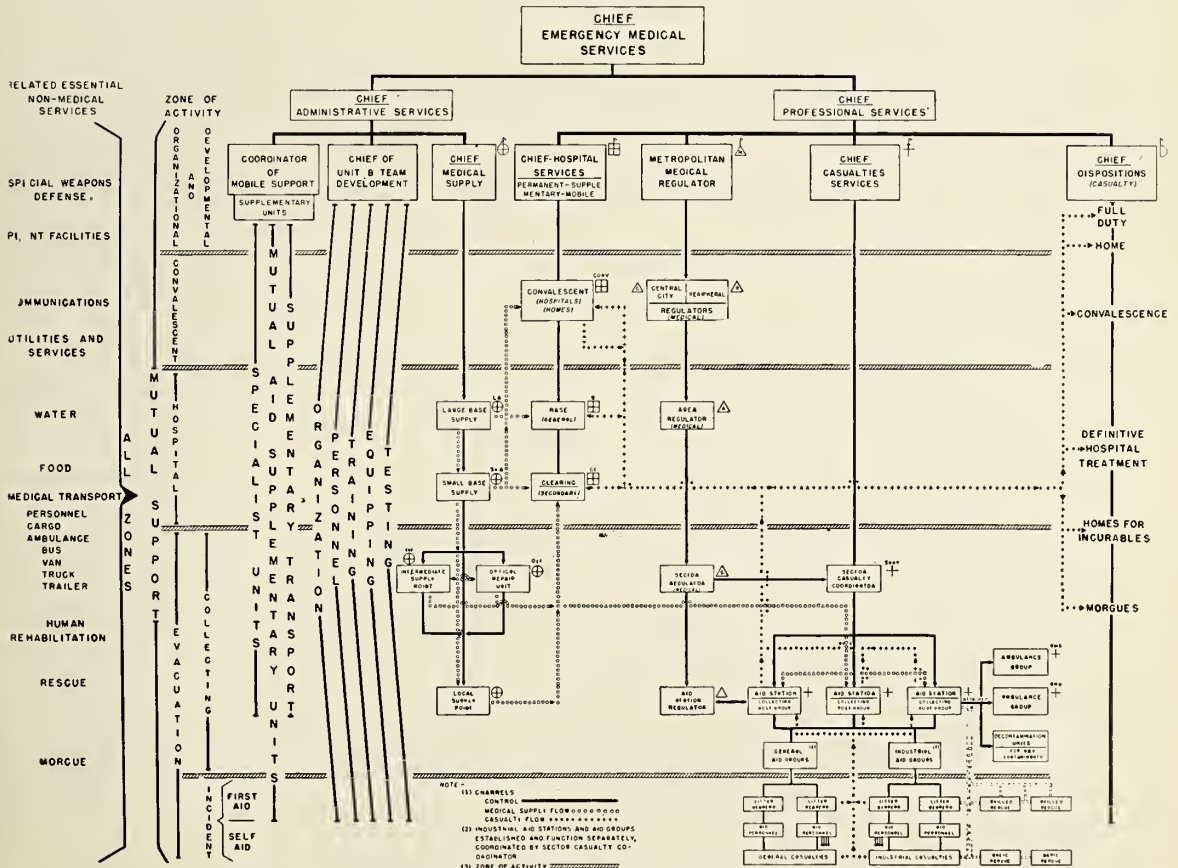


Figure 3. Suggested Metropolitan Organization for Civil Defense—Handling of Casualties.

Details of useful tags and other records are available elsewhere. World War II tags<sup>14,15</sup> would require minor revision. Appropriate uniformity on a national basis probably will be established.

The third function of sorting should be considered, without delineating the many details of the work of aid personnel and litter bearers which would have preceded the reception of casualties at the Aid Station. Available references<sup>16,17</sup> of aid to students of this problem deserve analysis, at least briefly.

Upon arrival at the Aid Station casualties will be sorted immediately. According to pre-set priorities there must be a balancing between the significance of the individual casualty on the one hand and the feasibility and practicability of the casualties services' time and capabilities for meeting the whole casualty problem on the other. Casualties normally will be sorted according to whether their later probable disposition will be through regular evacuation channels or separate evacuation channels. The latter will handle contaminated casualties.

Strict priorities would be given to the following order, one to six, inclusive, for regular channels, and seven to 10, inclusive, for separate channels of evacuation:

(For Regular Channels)

1. Definitive treatment, life-saving and rapid first aid; initiated at aid station and continued at hospitals, or initiated at hospitals if delay for that may be risked; given for severe hemorrhage, severe penetrating abdominal and chest wounds, extensive soft tissue destruction, badly torn limbs.

2. Delayed definitive treatment initiated at aid station and continued at hospitals, or initiated at hospitals if delay is possible; given, after handling the first group of definitive treatments (subparagraph 1, above), to severe burns (1/5 to 1/4 of body surface, or more), compound fractures, joint penetrations, severe face wounds.

3. Immediate resuscitation, then rest, where no surgery or other care is required to save life within a few hours; initiated at aid station or hospital; given for shock, small chest penetrations, and similar cases.

4. Artificial respiration, if means available.

5. Delayed first aid and evacuation to hospital, for specialized treatment; given minor head injuries, eye injuries, peripheral nerve injuries.

6. Delayed first aid and release to home or duty; given contusions, lacerations, sprains, simple fractures, minor burns.

(For Separate Channels)

7. Radiation casualties without injuries listed

above and with or without radiological contamination, evacuated to designated treatment or follow-up centers after decontamination, where feasible.

8. Radiation casualties with injuries and in order listed 1 to 6, inclusive, with or without radiological contamination, evacuated to designated treatment or follow-up centers after decontamination if feasible.

9. Chemically or biologically contaminated casualties; after decontamination, sorted into groups seven to eight and one to six, inclusive, in that order as indicated, then treated.

10. Chemically or biologically contaminated, without injury; after decontamination, released to duty or home.

The final activity of the aid station prior to disposition would be provision of treatments, followed by transfer to hospital, home, duty, or to morgues as necessary. The details of treatment need no further discussion here.

After such sobering reflections let us recapitulate. We have covered some basic factors related to handling casualties; next, some essential components of a casualty-handling system have been listed; some available methods for applying military experience to handling civilian casualties in a civil defense system have been suggested. Extremely complex and intricate matters have been shown to assume understandable simplicity by arranging them in order, by eliminating confusing and extraneous details.

All of this discussion should impress thoughtful people with the absolute necessity for preventing or

A B C  
of  
SIMPLIFIED CIVIL DEFENSE  
AGAINST  
HIGH EXPLOSIVES

*Avoid Becoming Casualties*

All in Poor Shelters = Fewer Casualties  
than

Half in Good Shelters . . . and . . . Half in Open  
IF

Prospect of Becoming a Casualty IS

1 When standing in open or in street  
then it is

1/2 Lying down in open or in street

1/3 Lying behind low cover or in doorway

1/7 Concealed in brick house away from  
windows

1/16 in shelter

Table 2. ABC Simplified Civilian Defense Against High Explosives (avoid becoming casualties).



reducing the great numbers of wounded and for minimizing the severity of injuries producing the casualties. Unless that is done no system adequate for handling casualties foreseeable in modern war could be designed, much less implemented. Education of the public will achieve inestimable benefits, even though it were the sole means of response available to us. The fact that other means are available may not justify neglect of the greater possibilities of success from training the public. The teaching must be simple, convincing, and persistent, by practicing physicians and health department personnel. The public should learn that not only numbers of casualties can be reduced (Table 2) but that severity of injury may be minimized also.

That would be true preventive medicine, and in keeping with the best traditions of productive public health. The public health methods known to our departments, particularly mental hygiene and health education techniques, offer valuable and suggestive guides to civil defense of the future. As has been true when real medical problems of the past have appeared, team-work between the practicing physicians who are treatment experts and the public health specialists will overcome all obstacles in the handling of casualties.

We know we shall succeed.

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\*Copy available to authorized individuals upon request to Office of the Surgeon General, Department of the Army, Main Navy Building, Washington 25, D. C.

## Urology and Internal Medicine\*

Herman L. Kretschmer, M.D.

Chicago, Illinois

It is a privilege and an honor to be with you today and to deliver the fourth Peter T. Bohan lecture. This lecture was established as a tribute to a great physician by his former students, friends and colleagues.

Doctor Bohan has wielded an important influence in this section of the country. The high ideals he has instilled into the minds of his students, interns, nurses, and colleagues stand as a monument to his achievements as a teacher, consultant and practitioner of internal medicine.

The many borderline problems in diagnosis that arise almost daily in the practice of the internist and the urologist are mute evidence of the close relationship between internal medicine and urology. I wish to discuss with you some of these borderline problems which are encountered so frequently.

\*Fourth Peter T. Bohan lecture at the University of Kansas School of Medicine.

The importance of a broad general training as a foundation for specialization again needs to be emphasized. Having started my professional career as a general practitioner, I speak from experience. It is doubtful whether the large medical ward takes the place of a few years in general practice since the type of patient seen is entirely different. Conscious of this defect in our training, there now is a tendency to have the trainee spend a certain amount of time with a well qualified general practitioner.

The keystone in the arch of the practice of medicine is the patient himself. Because a patient consults the urologist first, does not necessarily make him a "urological case." Failure to recognize this fact often results in a long course of unnecessary treatment.

To elicit a good history takes time. However, one is well repaid for his time and trouble. Many of the preliminary facts may be obtained by an

assistant, but the final interpretation of symptoms and signs cannot be delegated to another.

With the increasing mechanization of medical practice, the history and physical examination are so frequently glossed over, and short cuts in the form of mechanical aids are used instead. It is deplorable to see patients who have had innumerable tests made, the reports of which they bring with them, and in whom no physical examination was made! The sad part of this routine is that it leads to useless and unnecessary laboratory tests, and adds greatly to the already high cost of medical care.

#### **The So-Called "Male Climacterium"**

The use of this term is most unfortunate. There is no justification for it. In lieu of trying to determine the cause of the patient's complaint, it is used as a catch-all, and all too frequently the patient is given long courses of hormone injections which obviously he does not need and which are not the answer to his problem.

Because of the age of the patient and his vague and indefinite symptoms, such as nervousness, hot flashes, insomnia, etc., a diagnosis of "male climacterium" is made. The symptoms are frequently psychic in origin. The history is of the greatest importance and often gives the physician the clue to the cause of the patient's symptoms. A little patience and a few direct questions on the part of the physician will generally ferret out the cause of the patient's symptoms. Simple direct questions will usually bring to light their origin, which may vary from family trouble and the fear of losing his job because of his age, to financial worries, etc. It is obvious that such a patient will not benefit from a long course of hormone injections.

#### **Thyroid Disease and Urinary Symptoms**

Urinary symptoms, such as frequency, urgency, burning, etc., appearing concomitantly with hyperthyroidism, occur frequently enough to bear this possibility in mind and hence to avoid a series of bladder treatments that are not indicated.

The presence of great nervousness, a fine, fast tremor and a rapid pulse make the diagnosis of hyperthyroidism perfectly obvious at the time of the first interview.

I have recently seen several patients with marked urinary symptoms due to hyperthyroidism and in whom the urological examination was negative. In one case, a few simple questions elicited the fact that the patient was taking three grains of thyroid a day without medical supervision.

#### **Parathyroid Disease and Urinary Disease**

The specialist must never lose his medical point of view. This is amply illustrated by the patient

with recurring kidney stones. The number of patients with parathyroid disease and kidney stones is not very large. However, the relationship between the two should be constantly borne in mind, (1) especially when the patient has had one or more operations for renal or ureteral calculi; (2) has passed calculi over a long period of time; or (3) when following a nephrectomy the patient now harbors stones in the remaining kidney.

In a certain number of instances careful palpation of the neck demonstrates the presence of an adenoma of the parathyroid gland. When hyperplasia is present, instead of an adenoma, palpable enlargement may be absent.

The presence of bone cysts in a patient with kidney stones should at once arouse our suspicions for parathyroid disease.

The incidence of parathyroid disease in the average kidney stone case is very rare. The diagnosis of parathyroid disease in the presence of renal and ureteral calculi is made from the changes in the blood calcium and blood phosphorus.

The incidence of kidney stones in parathyroid disease is fairly frequent.

#### **Pernicious Anemia**

Pernicious anemia with spinal cord changes resulting in bladder symptoms brings the patients to the urologist. Frequency of urination, difficulty, and at times, dribbling, coupled with a few pus cells in the urine, unfortunately result in local treatment in the form of irrigations and instillations "without relief."

The pallor, unsteady gait, and Romberg sign, and changes in the knee jerks suffice to make a diagnosis of spinal cord bladder. The blood count clinches the diagnosis.

Spinal cord bladders due to pernicious anemia are not very common today because of the early diagnosis and treatment of pernicious anemia, but the possibility must always be borne in mind.<sup>2</sup>

#### **Leukemia**

The urologist is frequently the first one to be consulted by the leukemic patient. The symptoms presented are hematuria and priapism.

The hematuria is due to leukemic infiltration of the kidney and the priapism due to leukemia infiltration of the corpora cavernosum. They are rarely both present at the same time.

The patient with persistent priapism should at once call our attention to the possibility of leukemia. The onset is slow and the course progressive until finally the priapism which at first was intermittent is constant.

There is nothing characteristic of the hematuria. A tentative diagnosis can often be made from



the history and the presence of an enlarged spleen or the enlarged lymph nodes. The routine blood examination establishes the diagnosis except in rare instances when a sternal puncture must be made.

A complete urological examination is necessary to rule out other causes of hematuria.

#### Backache

Backache in the minds of the laity means kidney disease and hence many patients with backache consult the urologist.

Of the many kidney lesions responsible for backache, I shall mention only a few: hydronephrosis, tumor, stone, tuberculosis, polycystic kidney, solitary cyst and nephritis.

If the urological examination is negative, one is confronted with the consideration of all other causes of backache. Among these may be mentioned arthritis of the spine, intercostal neuritis, fibrositis, prolapse of a disk, and myositis.

Probably the most common urological cause of backache in the young or middle-aged male is chronic prostatitis.<sup>3</sup> The prostate as the cause of backache is frequently overlooked because there are no symptoms directing attention to it. Rectal examination showing changes in the prostate and the presence of pus in the prostatic strippings establish the diagnosis of chronic prostatitis as the cause of the backache after the previously mentioned causes have been excluded.

#### Orthostatic Albuminuria

Because the patient has been told he has kidney trouble, or in response to a request for urological consultation, it falls to the lot of the urologist to see patients with orthostatic albuminuria. At times this presents a difficult diagnostic problem. The problem of whether or not the patient has a nephritis or an orthostatic albuminuria is of great importance to him.

Young, Haines and Prince have suggested that the following criteria be met before a diagnosis of orthostatic albuminuria is made: (1) no past history of renal cardiovascular disease; (2) no elevation of blood pressure; (3) no white blood cells, red blood cells or casts in the urine, except intermittently and in small numbers; (4) normal kidney function (phthalein, urea clearance, dilution and concentration tests); (5) normal blood chemistry, nonprotein nitrogen, blood urea, total protein and albumin: globulin ratio; (6) negative plain x-rays and normal intravenous urograms; (7) absence of albumin in urine secreted when the patient is in the horizontal position.

Albuminuria of this type requires no treatment and there is no reason why the patient should not go about his activities in a normal manner.

#### Association of Mental Disease and Urinary Disease

In some cases the presence of an unrecognized severe mental illness may be the cause of a difficult postoperative management. It is because of this possibility that great care must be exercised in the problem of diagnosis and treatment of urinary tract disease in a patient who may have severe mental disease.

I have in mind a young woman of 18 upon whom I operated for a large benign tumor of the bladder. During her convalescence, she was the most irascible patient in the hospital. Nurses, interns, residents all thought she was a badly spoiled child. Several years later she was admitted to another hospital with the diagnosis of dementia praecox from which she no doubt suffered at the time of the bladder operation, and which explained her conduct during her postoperative convalescence.

#### Foci of Infection

Foci of infection in the teeth, tonsils or sinuses may be responsible for lesions in the genito-urinary tract. An acute attack of tonsillitis has resulted in an acute attack of pyelonephritis with or without gross hematuria.

Chronic infection in the tonsils or teeth may result in chronic pyelonephritis. An acute exacerbation of a chronic tonsillitis has been followed by a profuse painless hematuria. In a patient with profuse symptomless hematuria, in whom the cystoscopic examination shows the presence of submucous hemorrhages, we at once direct our attention to the teeth, tonsils and sinuses for the possibility of infection. In some of these cases we have isolated the same type of streptococci from the urine as were isolated from the tonsil, the teeth, or sinuses, thus establishing causal relationship.

In some cases of chronic prostatitis, the only etiological factor that can be demonstrated is the presence of infection in teeth, tonsils or sinuses. It may be difficult to establish the causal relationship between the distant foci of infection and the chronic prostatitis. Even so, it is the duty of the urologist to advise the patient to have these foci of infection eradicated purely as a health measure.

The importance of eliminating foci of infection in the prevention of pyelitis of pregnancy was demonstrated by Heaney and Kretschmer.<sup>1</sup>

Since the elimination of foci of infection during pregnancy was established as a routine at the Presbyterian Hospital, their incidence of pyelitis during pregnancy was reduced to 0.3 per cent, the lowest incidence that I am familiar with. The patients who were admitted with acute pyelitis all had failed to follow advice in the out-patient department to have their various foci cleared up.

### Rectal Lesions

The need for the urologist to evaluate gastrointestinal symptoms, especially in the man of prostatic age, is important. When the patient who has prostatic symptoms presents himself for treatment and gives a history of a sudden change in bowel habits, our suspicion should at once be aroused for the presence of a carcinoma of the bowel or rectum, since changes in bowel habits are not due to prostatic obstruction.

With the history of a change in bowel habits, especial care must be used during the rectal examination to search with the examining finger for the presence of a carcinoma of the rectum. If this is negative, then proctoscopic examination and a barium enema are in order.

I recently had two patients who presented themselves for operation for prostatic disease. In taking the histories, the patients mentioned that a change had taken place in bowel habits. Rectal examination revealed that the patients had carcinoma of the rectum, in addition to their prostatic lesions.

### Recurring Attacks of So-Called "Cystitis" in Women

I wish now to discuss an interesting group of women in whom a diagnosis of recurring attacks of cystitis is made and in whom the urological examination is negative when she presents herself for examination. They form a relatively large group and are seen both by the general practitioner and urologist. They travel from one doctor's office to another, receive all sorts of local treatments without results. Many are treated with hormones, vitamins and "shots" of various kinds. It is obvious that in dealing with this type of patient it is of the greatest importance to determine the cause of the "recurring attacks of cystitis."

In a very large number of these patients, one has no difficulty in obtaining a history of disturbances in the intestinal tract. It is striking to note how frequently these women give a history of chronic constipation, loose and frequent bowel movements, due to so-called spastic colitis or the use and abuse of cathartics.

Some of these patients volunteer information that they have been under treatment for a "spastic bowel" without result. I have been convinced for a long time that many of them are on a psychogenic basis.

Some of the cases of so-called "cystitis" are on a purely psychic basis. This is usually established after organic disease has been excluded. Among the many psychological factors I have seen, I would like to mention only a few: recent or remote suicide of the husband, fear of pregnancy, the marriage of a favorite son or daughter, the fear of transmitting a long since cured venereal disease, etc.

Another frequently overlooked cause for the recurrent attacks of cystitis is amoebiasis. The importance of an accurate history and diagnosis is illustrated by a recent patient who had many cystoscopic examinations, ureteral dilatations, intravenous and retrograde pyelograms and local bladder treatments for many years. In addition, she was taking a hormone, a vitamin, a barbiturate, one of the sulfa compounds and potassium bromide.

When I questioned her about her bowel movements, she stated her bowels were fine because she had five or six good movements a day. Examination of the stool for amoebiasis pointed the way to proper treatment. Examination of other members of her family revealed that they too had infestation with the amoeba.

Some cases of frequency of urination are associated with dyspareunia. At times it is difficult to obtain a history of dyspareunia because of modesty or disappointment.

Then there is the occasional woman of the opposite type who has recurring attacks of so-called "cystitis" and who tends to focus all her attention on her bladder symptoms and who boasts to interns, residents and nurses of her sexual powers and of her many extra-marital affairs. I have seen women of this type who have had bladder treatment for many years. What they need, of course, is treatment by a psychiatrist.

### Stricture of the Ureter

Fortunately, the hyperenthusiasm for the treatment of so-called stricture of the ureter is on the wane. All too frequently a diagnosis of stricture of the ureter is made, often on a purely symptomatic basis and without evidence of dilatation of the ureter or kidney pelvis. As a result, the patient is subjected to many ureteral dilatations without relief.

Many of these patients who are women have definite psychological problems, such as a recent or impending divorce, an errant husband or in-law troubles. Naturally this group of patients will not be benefited by ureteral dilatations.

On the other hand, in many of these women the symptoms are due to organic disease in the pelvic organs that need surgical correction. For example, I recently saw a woman who had over 40 ureteral dilatations without relief of her symptoms. The underlying cause of her symptoms was an extensive endometriosis.

It is evident that great care must be used in selecting cases for treatment with ureteral dilatation.

### Impotence

Most cases of impotence are in persons who first consult the general practitioner.



There is no problem of greater importance to the general practitioner, internist or urologist than the problem of the patient with impotence. Frequently a diagnosis of sexual neurasthenia is made and the patient is given "the brush-off." This is most unfortunate.

The importance of an accurate diagnosis and the institution of proper treatment is imperative, because a cure will or may in many cases prevent the breaking up of a home since impotence is a common cause for divorce.

There is no justification for prescribing hormones, vitamins, "shots," etc., without a detailed examination of the patient. The problem becomes a very simple one for the general practitioner if he will bear in mind the three common causes of impotence: 1. general; 2. local; 3. psychic.

1. *General Causes.* The history and physical examination are the starting point to rule out systemic disease such as severe mental disease, tabes dorsalis, chronic nephritis, diabetes, intoxication due to alcohol or tobacco, tuberculosis, etc.

2. *Local Causes.* It is assumed that the external genitalia are normal. The most frequent cause of impotence, in my experience, is chronic prostatitis or seminal vesiculitis or both, as they so frequently occur together. The rectal examination, plus the microscopic examination of the expressed fluid, serve to establish the diagnosis.

3. *Psychic Origin.* Next to chronic prostatitis, psychic factors are the most frequent causes. At times it may be difficult to elicit the psychic factor. When the facts are presented to the patient, namely, that there is no organic cause for the impotence (no evidence of disease either systemic or in the genito-urinary tract) and that there must be a psychic cause for his impotence, it is generally quite easy to obtain his cooperation and to have him give the reason for his impotence.

Impotence associated with severe mental disease is relatively rare, but its possibility must always be borne in mind. I recently saw a dentist whom I examined twice and each time he was negative, but he seemed highly nervous. I then learned that he was under treatment by a psychiatrist who told me that he was a serious mental case and might kill himself or maybe someone else.

#### Elusive Ulcer

Because many of these patients consult the gen-

eral practitioner first, it is well for him to be on the alert for this type of bladder lesion.

The history is that of frequent and often painful urination which has been present for a long time and which has gradually become worse and is not relieved by the various forms of treatment employed.

Often the patient has had one or more surgical operations without relief and frequently the urine is clear and sparkling, showing at most a few red or white blood cells.

The patient with this history should have a cystoscopic examination which establishes the diagnosis at once.

#### Congenital Anomalies of the Kidney and Ureter

Congenital anomalies of the kidney and ureter formerly were considered to be very rare. With the routine use of intravenous urograms by the urologist, the general practitioner, the internist and the surgeon, many cases of renal anomalies are recognized. Their proper evaluation is important.

The mere fact that a patient has a bifid renal pelvis does not justify an operation. If the patient complains of pain, it must be remembered that the pain may be due to something else and that the congenital anomaly is hardly to be considered as a factor in the production of pain, if the pyelogram is normal. On the other hand, in some of these cases of double renal pelvis, double ureter, a hydro-nephrosis may be present in one half of the double kidney, and when present may be the cause of pain. Failure to recognize this has resulted in appendectomy when a heminephrectomy was indicated. In other words, it should be remembered that the mere presence of a double kidney pelvis and double ureter does not justify operation.

In an occasional case the ureter may have an anomalous insertion outside the bladder. Cases in which the ureter is inserted in the floor of the urethra or in the vagina give a typical history of being wet day and night since birth, and hence the diagnosis is perfectly obvious.

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## PRESIDENT'S PAGE

Dear Doctor:

I should like to report that in spite of inclement weather, it is purported that the A.M.A. registration reached an all-time high and most all the doctors attending felt our new president is an efficient, comparatively young, democratic leader from whom we can expect material progress. At the meeting there existed an atmosphere of quiet and possibly even satisfaction that we had, for the present, enjoyed success in halting the march of socialized medicine. This postponement or delay resulted from political and factual power, the strength of which is difficult to estimate; yet there was a feeling that no one, anywhere, should at any time relinquish his hold on the gains that have been made.

The 15-point program outlined to the House of Delegates is being pursued; unity, harmony and correlation of our efforts with allied groups are in the making, all of which is designed to improve the health of Kansas citizens.

I would like to ask that you read your June issue of the Journal because it outlines the program for the year, and I believe it is imperative each and every one of the team must know and understand the plays if we hope to realize the aims and goals we're seeking.

Regarding proposal number two: I am happy to report this program is already in progress, and I have confidence in the outcome of the survey being made by the State Social Welfare Board and the Medico-Hospital-Drug organizations. This problem is joint! The desire of all concerned is to provide the best care possible for all who are eligible. The sincerity of approach as manifested by all board and professional group members thus far in conference, is most encouraging. This I believe to be evidence of team work and good substantial progress.

I believe that every member of the Kansas Medical Society receives full value for all dues paid, and I call attention to Proposal Number 11 concerning the two-year special assessment and ask the membership to take inventory, and after comparison and evaluation I believe pride will be had in the privilege of paying this nominal request. I believe all of us would improve our reactions if and when we understood even a few of the major accomplishments of our parent organization. It has been suggested that our state programs give some time to accurately acquaint us with our A.M.A. and its activities.

Emphasis is placed upon a sincere request previously made—what can be done to improve our Society? Please don't hesitate to provide criticism that is or can be constructive. In behalf of the Council and officers I solicit your "gripes," for we want to know them. 'Tis only then proper consideration can be given when and where it's due. This correspondence can be directed to the Executive Office or directly to the writer. Let us hear from You!

I am sure that each and every member of our Society is proud of a singular distinction given our state by the A.M.A. House of Delegates in electing, for the first time I believe, a Kansas doctor to one of the councils. This honor went to Franklin Murphy by a four to one vote for a seat on the Council of Medical Education and Hospitals. Congratulations, Doctor Murphy!

Always sincerely yours,





## EDITORIAL COMMENT

### The Price of Public Relations

Public opinion can be altered, but not without paying a price. At a cost of \$25,000 or \$50,000 or more a firm of experts could be employed to correct false impressions and lack of information the public may have. Experience has proven such a procedure to be effective. The outcome can be predicted with scientific accuracy, but the cost is high.

Medicine has an alternative at its disposal. In contrast with much of industry the medical profession can provide its own public relations. This can also be effective. Again the results can be guaranteed, but once more there is a cost involved.

It is the price you pay for practicing a superior quality of medicine, giving to each patient who trusts his health into your care the very best service you can give him.

It is the price of making him feel your genuine concern over his personal welfare as though he is the only patient you have.

It involves a word of reassurance, a smile perhaps, a gesture of friendship offered in a leisurely manner that belies your own weariness.

It is the personal sacrifice in being more than fair in the matter of economics. It is thinking in service rather than dollars so that your patient not only understands your charges but leaves with the feeling that he received something more than he paid for.

It is the cost you pay for having genuine respect for the ability and integrity of your colleagues in the medical profession, and in return earning their confidence for everything you say or do.

But that is only the beginning. The price you will pay for good will from the public is the price of exceptional citizenship. As a community leader you engage in all progressive projects. As an enlightened citizen you actively support good government at local, state and national levels.

You will work toward preserving liberty in these United States and free enterprise for medicine, but with equal fervor also for all professions and industry and labor and agriculture and everyone, knowing that no one will benefit unless freedom is shared.

Even that is not all. There is also the priceless responsibility of so directing your life that you can gain the confidence of your neighbors, that respect and friendship are given you everywhere you go, that people feel better for just having met you. It is living the ideals that constitute the highest traditions in the art of medicine.

So the price of public relations becomes fantastic and \$50,000 seems an easy way out. It is true, one

method can be made to substitute for the other, but only to a degree. The problem is relative and just so far as we are willing to pay the price will we earn first the good will, then the support of the public. Our immediate question is simple: What is this worth? How much will we pay?

### Biology of Ageing

Edward A. Bortz, M.D., of Philadelphia recently read a paper before the Medical Society of Delaware on the topic of ageing in which he stressed the coming importance of this specialty in medicine. If the utilization of the organs in the human body were maximum, the human life span should approximate 125 years. Even though we have made great strides since the Roman empire when the life span was 25 years, to 1900 when it was 49, to the present when it approaches 70, we have not yet reached the ultimate potential.

"The geriatrician is coming onto the stage at a most appropriate time. There are many patients waiting for him. An accurate survey of living practices and an appraisal of physical resources is preliminary to any prescription for our elderly patients.

"Prophylactic geriatrics recognizes the possibilities of preventive measures which can be instituted. Control of body weight, adjustment of the diet, improvement of body elimination, the elimination of infections, the need for more rest and recreation—all these are important to the continued well-being of patients approaching the summit of the years. In this area of the human life span, the biological potentials should be kept in mind. Premature human deterioration may be brought under control and an expansion of the harvest years, the happy years, may result. . . .

"Warthin describes the life of man as a tragic comedy in three acts—evolution, maturation, and involution. Medical science is now turning its attention to the last act, involution. The human machine transforms, stores, and releases energy. At birth the individual is given an energy charge with potential to carry it along for a variable period of time. Warthin describes the individual human body as a temporary incident in the life of the species.

"In the biological human life cycle the body attains full development and then struggles for maintenance at the height of maturity until energy loss brings about decline and senescence. Senescence is a gradually developing state of organ and tissue involutions. When these are sufficiently advanced as to be clinically apparent, then age is upon us. . . .

"Warthin was thinking entirely in terms of man as an animal with total disregard for the needs of society. The extension of the human life span is producing new opportunity for the development of social equilibria. Here is a new field which needs to be explored by the geriatrician.

"In striving for the preservation of human life, science is now examining the processes and influences which destroy it. It may be possible to avoid premature ageing of tissues. . . . Ageing processes are hastened or modified by diseases; therefore, one way to prolong life is to protect the organisms from illness or disease. It becomes a matter of avoiding complications which accelerate the processes of ageing.

"Certain tissue changes occur with the passage of time. Decrease in water content takes place and the individual shrinks in weight and stature. There is progressive dehydration, there is condensation of colloids. Elasticity and flexibility decrease. Wells believes this accounts for the ageing of elastic colloidal fibers in blood vessel walls.

"Physiological reserves are likely to diminish with the passage of time. The decrease of adaptability is a sign of oncoming age. . . .

"The rich colors and qualities of interesting mature human life with the performance of work which has social significance will add to the quantity and quality of human living. Newer drugs, including the antibiotics, the vitamins, the hormones, cortisone, and ACTH are a few of the spectacular remedies now in the armamentarium of the geriatrician. The expansion of the mature years represents a major goal of science today."

### Federal Health Legislation

Numerous health measures of one kind or another have been introduced before this session of Congress. The Washington office of the American Medical Association summarizes the most important of these measures and reports to the various state societies their progress and what, if any, action the A.M.A. has taken. A few days ago some 30 such bills were reported on a variety of subjects.

The A.M.A. disapproves of the passage of H.R. 3298 and S. 1186, identical measures dealing with refilled prescriptions. The objectives of these bills are approved, but such legislation is not now considered necessary or desirable in the belief that control of professional practices should remain in the states. Disapproved also is H.R. 3559 which would establish a federal agency for the handicapped. The A.M.A. states that approval should not be given to establish a department for small segments of the field of medicine, that it would cause an overlapping of services and an unnecessary

expenditure of funds. There are some eight or 10 similar bills which were disapproved for the same reasons.

The A.M.A. also registered disapproval over H.R. 3931 which would create the United States Medical Academy, on grounds that facilities would be difficult to obtain and selection of entrants would probably be political. Disapproved are H.R. 3996 authorizing the V.A. to presume service connected disabilities and H.R. 4176, the new version of the World War II E.M.I.C. plan. Objections to the first are on grounds that this would further liberalize V.A. regulations, and as for the second it is felt there is not sufficient need. One other disapproval was voiced for H.R. 4322, attempting to provide school health services, because the bill does not offer a means test.

In the same list are numerous bills that were approved by the A.M.A., for example H.R. 3257 offering research regarding chemical activities in food, another, H.R. 3536, exploring health hazards of air pollution, the latter on grounds that this is a new and unknown field in medicine requiring research.

Some publicity has been given through the press and by way of the radio for certain other health proposals. Senate Resolution 142 proposes to examine the Hoxie Cancer Clinic of Dallas, Texas, to determine whether the methods employed by this clinic in the treatment of cancer have proved to be a cure for such diseases. The A.M.A. is awaiting the results of this investigation with interest and will withhold comment until the findings are available. House Resolution 238 proposes to appoint a study group to investigate the problems of ageing. Again the A.M.A. is withholding comment until the results of this study may become known. At that time there will undoubtedly be recommendations by the investigating committee which will receive the scrutiny of the A.M.A.

There are, of course, continued activities with reference to the war manpower bill and federal aid to medical education. Even though hearings are being conducted and both bills seem to be progressing in the Congress, there is no certain indication at the present time of the final composition of either. The war manpower bill probably will set the term of physician draftees from 21 to 24 months and will defer pre-medical students at the present level of medical school enrollment. This bill also currently proposes to release World War II reserves who have served in Korea for 17 months. It proposes to limit the Army to 5,000,000 men and permits educational deferments for medical and other persons at the discretion of the President. It appears that some form of federal aid to medical education will be provided, and the House of Delegates



of the A.M.A. approved such aid in the form of grants to defray building cost. More complete information on these measures can be obtained through the Executive Office of the Kansas Medical Society, 512 New England Building, Topeka.

### Medical Journalism

A recent article in the New England Journal of Medicine on medical literature surveyed the history of scientific publications. It was surprising to learn, for instance, that there are between 8,000 and 10,000 journals published today that are devoted to medicine and related sciences. Attempting to index and record this mass of literature has become a tremendous problem. The *Quarterly Cumulative Index Medicus* is falling far behind in its task of attempting to record some 90,000 articles a year of the 200,000 or more that are published. Unesco is trying to work this subject over on a uniform international basis.

The first known medical journal was published in France in 1679 and gave up in 1683. The second appeared in Holland in 1680 and the third, a German publication, in 1682. The fourth journal that appeared and the first in the English language was *Medicina curiosa*, a quarterly of 56 pages, the first issue of which was published on June 17, 1684. The second issue appeared on October 23 of the same year, but the effort was too great and it forthwith expired.

The first New World journal was the *Mercurio volante* that was published, surprisingly enough, not in the United States but in Mexico City. It continued through 16 issues and stopped in February, 1773. In the United States there were occasional medical articles but nothing approaching a journal until the *Medical Repository* appeared in New York in 1797.

Morris Fishbein, studying the history of medical literature, stated that the 18th century produced some 80 medical periodicals, of which 55 were German, four English, three French and one American. The journals of the 17th and 18th centuries are literary curiosities when contrasted with present day communications. None have survived to the present time and only a few are even remembered.

The *Edinburgh Medical and Surgical Journal*, started in 1805, is the oldest publication still current. The *Lancet*, published in London, is next, and third is the forerunner of the present *New England Journal of Medicine*, which began in Boston as a quarterly periodical in 1812.

The American Medical Association was founded in 1847 and at the first meeting a committee on medical literature was appointed of which Oliver Wendell Holmes was a member. This committee determined to prepare "an annual report on the

general character of the periodical medical publications, on medical compilations and compends by American writers, on American reprints of foreign medical works, and on all such measures as may be deemed advisable for encouraging and maintaining a national literature of our own." Thirty-six years later, on July 14, 1883, the *Journal of the American Medical Association* was born. Since that time most of the other present day journals were started. Many are published by medical societies, specialty organizations, clinics and hospitals. Some are supported entirely by advertising, but all perform the service of providing an outlet for a scientific opinion of the medical profession.

### Annual Registration Fees Due

Individual notices were mailed last month by the Kansas State Board of Medical Registration and Examination to all Kansas physicians at their last known addresses, advising that the annual registration fee of \$1.00 would become due and payable on July 1. Early payment is urged. Those who are delinquent on October 1 will be required to pay a reinstatement fee of \$5.00 and present two affidavits.

### A.M.A. Meeting

A total of 28,396 persons registered at the June meeting of the American Medical Association in Atlantic City, including 12,229 physicians and 16,167 guests. Dr. John W. Cline, San Francisco, was installed as president and the following officers were named to serve with him: Dr. Louis H. Bauer, Hempstead, New York, president-elect; Dr. Oscar B. Hunter, Washington, D.C., vice president; Dr. George F. Lull, Chicago, secretary; Dr. J. J. Moore, Chicago, treasurer; Dr. F. F. Borzell, Philadelphia, speaker of the House; Dr. James R. Reuling, Bay-side, New York, vice speaker. Dr. Dwight H. Murray, Napa, California, succeeds Dr. Bauer as chairman of the board of trustees.

Among actions taken by the House of Delegates were approval of a plan to retain Chem Whitaker and Leone Baxter to manage the A.M.A. educational campaign, adoption of a resolution which supports federal aid to medical schools for construction only, authorization to expand the A.M.A.'s Physician Placement Service through which many communities obtain assistance in securing the services of a physician, adoption of a resolution which urged a "thorough investigation" of activities aimed at indoctrination of students with the "insidious and destructive tenets of the welfare state."

The 1952 meeting will be held in Chicago, 1953 in New York, and 1954 in San Francisco. The clinical sessions will be held in Los Angeles in 1951, in Denver in 1952, in St. Louis in 1953 and in Miami in 1954.

## Case Reports from the University of Kansas Medical Center\* Tumor Conference

Carcinoma of the Colon

Edited by R. E. Stowell, M.D., and D. M. Gibson, M.D.\*\*

### Case No. 51-18

E. L., a 54-year-old woman, was admitted to the University of Kansas Medical Center on January 18, 1951, with a history of progressive fatigue and pallor for 18 months. She had had no change in bowel habit, weight loss, or cardiorespiratory or genitourinary symptoms at this time. Her local doctor gave her weekly liver injections, iron, vitamin B<sub>12</sub> and folic acid medication for anemia. During 10 months on this regime she became progressively more anemic. She began to lose weight five months after onset of her symptoms, and after 10 months she noticed a stony hard and tender mass in the right upper quadrant of her abdomen. A presumptive diagnosis of carcinoma of the colon was made in the Out-Patient Department and was verified by barium enema.

On hospitalization, the patient's hemoglobin was five grams, red blood count 2,970,000 and total proteins 5.2 grams per 100 ml. Other laboratory studies were normal. After seven pints of whole blood, the patient's hemoglobin was 13 grams, with 4,100,000 red blood cells and total blood proteins 6.2 grams. At surgery, an annular tumor four cm. distal to the cecum was freely movable. There were two or three 1 x 1 cm. nodes in the mesentery of the right mesocolon. No distal spread was ascertainable. A right colectomy was performed and the patient's postoperative course was uneventful. She received three more blood transfusions and her hemoglobin was 13.8 grams on discharge on February 3, 1951.

### Case No. 51-19

L. O., a 44-year-old white man, was admitted on January 9, 1951, following a routine checkup. At that time he had no specific complaint, other than a little tiredness. He had no weight loss and no gastrointestinal symptoms. During his routine physical examination, the examiner noticed tenderness in the lower left quadrant of his abdomen and suggested a barium enema, which showed a filling defect characteristic of carcinoma. The patient attributed his disease to the fact that he has eaten from three to 10 pounds of popcorn a week for the last 30 years.

On admission to the hospital, the patient's blood and urine were normal, as was his physical examination. Barium enema revealed only an annular constricting lesion in his mid-descending colon. No

polyps were noticed on sigmoidoscopy. During surgery an annular lesion in the mid-descending colon was found, without evidence of local or distant spread. After a left colectomy, his postoperative course was complicated only by a small fecal fistula which was closing satisfactorily when the patient was discharged on January 28, 1951.

Dr. Tice: Roentgenograms on the first case show an annular, constricting lesion about an inch and one-half long, just below the hepatic flexure of the colon. It is characteristic of carcinoma of the colon, in that the barium column is cut off sharply at both ends of the lesion.

Roentgenograms on the second case show a filling defect in the descending colon. As shown in Figure 1, this is a longer lesion than that seen in the first case and has the same characteristics, in that the flow of barium is cut off sharply at both ends. Instillation of air following the evacuation of barium failed to demonstrate any polyps.

Dr. Summerville: The surgical specimen in the first case consisted of the terminal ileum, cecum, and

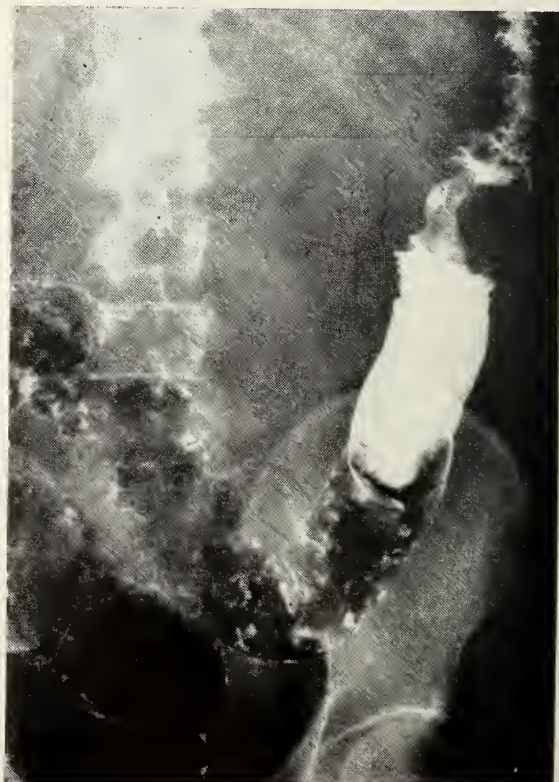


Figure 1. Roentgenogram showing filling defect in descending colon. Case 51-19.

\* Cancer teaching activities aided by a grant from the National Cancer Institute.

\*\* Trainee of the National Cancer Institute.



the right colon. There is an annular, constricting lesion in the ascending colon which, on microscopic examination, is a typical mucoid adenocarcinoma. Four of the eight regional lymph nodes examined showed metastases.

The surgical specimen in the second case consisted of the descending colon, with an annular, constricting lesion in the mid-portion. Microscopically this proved to be ulcerated adenocarcinoma. None of the 10 lymph nodes examined showed any evidence of tumor. In addition, many small sessile polyps were present throughout the length of colon.

Dr. Helwig: These are two interesting carcinomas of the colon: one is in the right colon, the other is in the left colon; one of the lesions is large, the other is relatively small; in one case the duration is long, in the other it is relatively short; in one case there is marked anemia, in the other there is no anemia. Both are in a common age group for these tumors. In the second case, polyps are a possible predisposing factor.

Dr. Orr: The history in the first case is significant: the patient consulted her physician 18 months before the correct diagnosis was made, and was treated for anemia. It is important to remember that with any patient who is losing strength and is anemic, it is mandatory to find out to what the anemia is due before treatment. It is often difficult to determine the cause of secondary anemia, but one of the first things to consider is carcinoma of the colon or stomach. Many of these patients lose their lives because they are treated for secondary anemias and are not operated upon soon enough. In any patient who is losing strength and appetite, in addition to being anemic, one should always think of the possibility of carcinoma of the colon, particularly the right colon.

The second case differs from the first one. This man had practically no symptoms, and his lesion was discovered since his doctor suspected the possibility of a carcinoma because he had some slight discomfort and tenderness in his left abdomen. He had no bleeding or anemia and was not sick; but he had a rather extensive carcinoma. These two patients exemplify the care which we should take in making diagnoses of carcinoma of the colon, because they can remain silent for a long time. This carcinoma of the right colon is atypical because it is much more common to have a large fungating carcinoma rather than an annular, constricting one. On the left side, however, the constricting type is common. As you know, the right and left colon differ considerably. Embryologically the right colon is derived from the mid-gut, whereas the left colon is derived from the hind-gut. They have a different blood supply: the right colon is supplied by the superior mesenteric artery, and the left colon is

supplied by the inferior mesenteric artery. They also differ physiologically: the function of the right colon is chiefly absorption, whereas that of the left colon is storage and excretion. Pathologically, the lesions in the right colon are likely to be the large fungating type which produce anemia, whereas in the left colon they are more likely to be of the constricting type which produce obstruction.

A considerable number of carcinomas of the colon are curable. The five-year survival rate in carcinoma of the recto-sigmoid areas is probably 60 to 70 per cent in those cases that are resectable. About 65 per cent of the carcinomas of the colon occur in the recto-sigmoid area. Carcinoma of the sigmoid and cecum probably have a little better prognosis than carcinoma elsewhere in the colon. The lymphatic supply is more abundant in the cecal region; however, metastases apparently do not occur any earlier or more extensively in the cecal region than elsewhere in the colon. The anemia in carcinoma of the right colon is probably due to bleeding but some believe that the large ulcerating areas permit greater toxic absorption, and that this produces the anemia.

Dr. Helwig: I agree that bleeding is the cause of the anemia, for the reserve iron is so low (the body has just four grams of iron; over half of this is in use all the time, and the rest is stored to make more hemoglobin) that it doesn't take much bleeding to decrease the iron storage, thus producing a microcytic, hypochromic type of anemia that is classical of carcinoma of the right colon. I think there is an increased absorption of toxin, but probably a decreased absorption of iron, and that may also be a factor because these patients don't respond well to simple iron therapy. Early obstruction in carcinoma of the right colon is uncommon because of the greater diameter and liquid content, as compared to the left colon.

Dr. Lilly: The most important etiologic factor in these carcinomas is polyposis. Polyps are potential cancers of the bowel; and it is essential to remember that, with polyposis of the colon, a second primary cancer may develop subsequent to the successful extirpation of the first tumor. The incidence of such a second cancer is approximately seven to 10 per cent. Gilchrist and David<sup>1</sup> studied 200 consecutive cases of cancer of the bowel; of 29 of these cases involving the right and left colon, they found that the five-year survival rate for carcinoma of the right colon was 82 per cent (77 per cent for those with metastasis and 100 per cent for those without metastasis at operation). On the other hand, the five-year survival rate for carcinoma of the left colon was 61 per cent (37 per cent for those with metastasis and 80 per cent for those without metastasis at operation).

They did meticulous mesenteric dissections and post-mortem studies, and charted the location of all lymph nodes observed. They found that the reason for the marked difference in prognosis between carcinomas of the right and left colon was failure to appreciate the pattern of lymphatic spread, and hence, too conservative resections. They established the fact that in the area of the splenic flexure the lymphatic spread was broad, while in contrast the lymph drainage of the right colon was relatively concentrated. Gilchrist and David<sup>1</sup> felt, for example, that a lesion in the descending colon should be resected from the right side of the mid-transverse colon down to the sigmoidal redundant part of the colon in order to remove lymphatic drainage widely.

Dr. Summerville: It is entirely possible that some discrepancy may exist between what the pathologist finds and what the roentgenograms show, since the radiologist would not be able to delineate polyps that were as small as one or two cm. in size. Some authors state that 10 per cent of the colonic polyps show evidence of malignancy, and that as high as 30 per cent of the cases of cancer of the colon have been associated with one or more polyps.<sup>2</sup> Polyps are found more frequently as one goes from the right side to the left side of the colon, so that they are more frequent in the sigmoid and rectum than in the cecum or ascending colon. Polyps other than those of congenital polyposis are also more frequently found with advancing age.

Dr. Helwig: One case of congenital polyposis reported some time ago<sup>3</sup> had seven operations over a period of 14 years for seven separate and distinct carcinomas. At the time of resection of the last segment of colon, four more carcinomas were found.

There appears to be a definite etiologic relationship between chronic ulcerative colitis and carcinoma of the colon. In a series of some 1,500 cases of chronic ulcerative colitis<sup>4</sup> there was an incidence of 1.9 per cent carcinoma, whereas in the general population the incidence is about .02 per cent, so carcinoma is almost 100 times more frequent in chronic ulcerative colitis. The Mayo Clinic<sup>5</sup> reported a series of some 2000 cases with an incidence that was a little over five per cent. Apparently in younger individuals—those that have had their ulcerative colitis since childhood—there's a much higher percentage of those that will subsequently develop carcinoma, suggesting that long-standing chronic irritation may be a significant factor.

Dr. Orr: There may be from one to hundreds of polyps in the colon. As in this second case, with general polyposis, the probabilities are that the patient has polyps throughout his colon, although they are unrecognized by sigmoidoscopic examination. What should one do with this patient in the future? Should one advise him to have a com-

plete colectomy now, or should one watch him very carefully? If he has general polyposis, he will probably develop another carcinoma. It is said that the patient with general polyposis always develops carcinoma if he lives long enough. In that event, a colectomy of course is indicated. This man should be watched carefully, and if there is any suspicion of recurrence he should have the major part of his colon removed. If there are no polyps in his rectum, then there should be an anastomosis to the rectum. Such patients should not be turned loose and told that they are all right; they should have repeated roentgen examinations and should be watched for any evidence of bleeding or discharge of mucus or anything that might indicate the possibility of another carcinoma.

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## DEATH NOTICES

WALTER J. PEARSON, M.D.

Dr. Walter J. Pearson, 86, an honorary member of the Wyandotte County Society, died at his home in Kansas City on June 1. He was a graduate of the University of Kansas School of Medicine with the class of 1907 and received his Kansas license the same year. He practiced continuously in Kansas City until his retirement several years ago.

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HECTOR MORRISON, M.D.

Dr. Hector Morrison, 81, who had practiced in Smith County for 50 years, died June 6. He was graduated from the University of Toronto Faculty of Medicine in 1900, and came to Kansas that year, practicing first at Womer and later moving to Smith Center. He was an honorary member of the Smith County Society.

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WILLIAM LAW WILMOTH, M.D.

Dr. W. L. Wilmoth, 80, an active member of the Marshall County Society, died June 21 in a Marysville hospital. After his graduation from the University of Nebraska College of Medicine in 1901, he practiced several years in that state before moving to Denison and then to Blue Rapids, where he continued in practice until his death.



## Senior Thesis from the University of Kansas Medical School\*

## Diabetic Neuropathy

William S. Mowrey, M.D.\*\*

Oceanside, California

The occurrence of specific disorders of the nervous system as a complication of diabetes mellitus has been recognized since de Calvi's classical paper in 1864.<sup>1</sup> "(He) . . . observed pains of sciatic distribution and peripheral areas of anesthesia in diabetic patients and introduced the idea that neurological lesions were the result of diabetes mellitus rather than the cause of this disorder."<sup>2</sup> Bouchard<sup>3</sup> in 1884 noticed that tendon reflexes were frequently absent in diabetics. Pavy,<sup>4</sup> a year later, noted "lightning pains, exquisite cutaneous hyperesthesia, and the nocturnal intensification of the neuritic symptoms."<sup>2</sup>

The neurologic complications of diabetes mellitus were thus clearly recognized some 85 years ago. Nevertheless, much still remains unknown about the etiology and pathology of diabetic nerve lesions.

Diabetic neuropathy may manifest itself in many ways. According to Root and Rogers<sup>5</sup> and Rudy and Epstein<sup>6</sup> diabetic neuropathy is not limited exclusively to the peripheral nerves but involves the entire nervous system, including the central, peripheral and autonomic parts with an especial predilection for the peripheral nerves.

Rundles<sup>2</sup> likewise stresses this point. He states that patients with diabetic neuropathy may develop evidence of peripheral sympathetic nerve damage as revealed by sweating deficiencies, loss of vasomotor and pilomotor control, dependent edema and certain types of skin alteration. He further described eight instances of orthostatic hypotension, orthostatic tachycardia, and other instances of disturbed gastrointestinal and genito-urinary function and of sphincter disturbances in diabetic patients, apparently due to disturbed physiology of the visceral nervous system. He also pointed out that degeneration of the peripheral sympathetic nerves may result in increased cutaneous vulnerability, and an impairment of the mechanisms by which infections, once introduced into the tissues of the diabetic patient, are localized.

Marble<sup>7</sup> gives other examples of widespread involvement such as neuropathic foot resembling Charcot joint, diabetic nocturnal diarrhea, bladder

paralysis, abnormal pupillary reactions, and ocular palsies.

Swarts and Stine<sup>9</sup> report a case of impaired intestinal motility, impotence and neurogenic bladder.

## Symptoms and Signs

The most outstanding symptom of diabetic neuropathy is pain which is characteristically worse at night. The pain may be superficial or deep, aching, grinding, darting, or lancing. Not infrequently sleep is prevented throughout the night until the discomfort subsides in the early morning hours. Accompanying the pain in most instances are paresthesias, including hyperesthesia, burning sensations, numbness, formication and anesthesia. The hyperesthesia is often so marked that the patient cannot bear the weight of bed clothing upon the extremities. Mental depression and emotional instability are not uncommon.

Rundles<sup>2</sup> finds that muscular cramps and muscular weakness, especially of the legs, are among the early symptoms.

Abnormal neurological signs are usual and may at times be the first or only manifestation of the disorder. In Rundles' series of 125 cases he found diminished or absent tendon reflexes the most common objective sign. The Achilles' tendon reflex was diminished or absent in 90 per cent of the cases; the patellar reflexes were absent or diminished on one or both sides in 80 per cent. The biceps and triceps reflexes were diminished or absent in one-third of his patients. Marked muscle tenderness was found in 37 per cent of his cases, decreased skin sensitivity in approximately 50 per cent with nine patients showing areas of complete anesthesia.

The vibratory sense at the ankles was diminished in 37 cases and absent in 20. Collens et al<sup>8</sup> observed that over 93 per cent of *all* diabetics whether or not they have neuropathic symptoms have an impairment of vibratory sense through the terminal parts of their extremities. They further state that a quantitative determination of impaired vibratory sense may be used as a guide to therapy and an index of progress.

In Marble's series of 50 cases, 27 exhibited weakness of one or more extremities. Peroneal paralysis (foot drop) was present in eight instances and quadriceps paralysis in five.

Hamman<sup>10</sup> discusses a case of diabetic neuropathy with an Argyll-Robertson pupil. He points

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\* Thesis written while the author was a senior student at the University of Kansas School of Medicine. Dr. Mowrey is now serving his internship at the U. S. Naval Hospital, Oceanside, California.

out that the symptoms of diabetic neuropathy are noteworthy in that they are the distinctive symptoms of involvement of the posterior sensory columns of the spinal cord. This has led to identification with *tabes dorsalis* and the pattern of symptoms is commonly referred to as diabetic pseudo-*tabes*.

Rundles states that the peroneal nerve is more vulnerable than the tibial and the ulnar nerve more vulnerable than the radial or median. Thirty-two patients in his study had genito-urinary and sphincter disturbances. Complete lack of sexual potency was recorded in 19 patients, and this often preceded any other symptom of peripheral nerve disorder. Eighteen patients were found to have an atonic type of bladder paralysis. The sphincter disturbances appeared to be the result of involvement of the pudendal nerve. The bladder paralysis of diabetic neuropathy is an atonic neurogenic paralysis similar to that seen in *tabes dorsalis*, pernicious anemia, and alcoholic neuropathy.

Of 35 recorded cases of diabetic neuropathy at the University of Kansas Medical Center, 25 of the patients complained of pain in the extremities which, almost without exception, was worse at night. Deep reflexes were absent in 10 of the 35 and were diminished in 16 others. Diminished vibratory sense was noted in eight of the series. One-third of the 35 patients complained of numbness and tingling of the extremities. Nine had anesthetic areas over the lower extremities and five had similar areas over the upper extremities. One patient had a diabetic Charcot joint of the ankle and two others suffered from diabetic nocturnal diarrhea. Two had Bell's palsy.

#### Incidence

Of 1450 patients admitted to the University of Kansas Medical Center between 1943 and 1950 with a primary diagnosis of diabetes mellitus, 35 were found to have clinical diabetic neuropathy and such secondary diagnosis was appended to each record. There may have been many subclinical cases that either escaped detection or were not made a matter of record.

Of the 35 cases, 26 (79 per cent) were white males between the ages of 38 and 71. About half of this number were in their middle forties. Nine of the 35 (21 per cent) were females (two of these were colored) between the ages of 38 and 65. Most of this number were in their early fifties.

Six of the 35 were diagnosed as having generalized arteriosclerosis as well as diabetes mellitus and diabetic neuropathy. None of the 35 had *tabes dorsalis* (or positive serology), pernicious anemia, syringomyelia, poliomyelitis, or history of alcoholism.

Regarding incidence, Marble<sup>7</sup> analyzed the records of 50 patients with diabetic neuropathy seen at the New England Deaconess Hospital in Boston. Of

these 26 were males and 24 females, "... illustrating the common lack of sex difference." The youngest patient at onset of neuritis was 25 years of age and the oldest was 77 with an average of 51 years. The average duration of diabetes at onset of symptoms was six years.

Rundles<sup>2</sup> finds in his series of 125 cases that the sex incidence was males 69 (55 per cent) and females 56 (45 per cent). More than a quarter of his patients were less than 40 years of age and eight were 20 or less. In the average patient of his series, diabetes had existed slightly over five years before the onset of neuropathy.

#### Case Reports

The first case is typical of moderate peripheral neuropathy with allied urinary bladder and sphincter disturbances:

E. S., No. 155747. This 48-year-old colored female was admitted to the University of Kansas Medical Center on August 25, 1944, complaining of numbness and tingling in the legs and feet, weakness in the legs on walking, and difficulty in beginning urination. The patient stated that about one year before admission she began noticing difficulty in starting urination and had some incontinence. She then developed a numbness and tingling in her legs with the sensation of pins pricking her. She also experienced considerable weakness in her legs upon walking. She often had a dull, aching pain all through her legs. This increased in severity at night. At times she felt as if she were going to fall. These symptoms continued about the same from time of onset.

Past medical history was essentially negative. Physical examination revealed a moderately obese, colored female. The pupils reacted normally to light and accommodation. The fundi showed many small, round cottonwool patches. The ears, nose, and throat were normal except for some bad teeth. There was a soft, grade II, systolic murmur in the mitral area. The abdomen was negative. The deep reflexes were diminished. There was partial anesthesia over the legs below the knees. Vibratory sense was not determined.

Laboratory examination revealed a one plus albumin and a four plus sugar in the urinalysis. Wassermann and Kahn tests were negative. Total protein in the spinal fluid was 119 mg per cent. Wassermann and colloidal gold were negative for spinal fluid.

The patient was controlled on 40 units of regular insulin every morning. The diet was determined to 140 carbohydrates, 70 protein, and 70 fats. While in the hospital the patient was given massive vitamin B and vitamin C therapy by mouth.

The patient was dismissed on September 17, 1944, with instructions to continue the above outlined



treatment. Her condition was diagnosed as diabetes mellitus with diabetic neuropathy. The prognosis was felt to be fairly good if the diabetes is closely controlled.

The next case is chosen to illustrate a long-standing case of diabetes mellitus in which the complications of diabetic neuropathy, diabetic nocturnal diarrhea, and dropsy are manifested in a quite severe form.

R. M., No. 164227, a 38-year-old white male, was admitted to the University of Kansas Medical Center on December 1, 1949. This patient was diagnosed as having diabetes mellitus 14 years prior to admission. He was regulated on regular insulin and got along fairly well until seven years before admission at which time he developed diarrhea which has persisted to the present time. He reports from three to 10 stools daily which are watery, light-colored, foul-smelling, and accompanied by flatulence and cramping. He has suffered mostly at night from this diarrhea. One year prior to admission patient developed ankle edema and albuminuria. This was controlled until a short time before admission with ammonium chloride and mercurial diuretics. Shortly before admission patient discovered that the diuretics were intensifying his diarrhea, and he refused further diuretic therapy. Upon admission patient was anorexic, vomited frequently, and had two plus pitting edema of ankles, legs, and feet.

Admission physical examination disclosed blood pressure of 180/110, above mentioned edema, and absence of sensation in lower extremities. He had burn scars on both legs due to lack of sensory guard. Deep reflexes were absent. Vibratory sense was absent.

The hospital course was stormy. It was almost impossible to regulate his insulin needs. This was thought to be due to insulin storage in the edema for certain lengths of time and then an unpredictable release of the stored insulin. He was given massive vitamin therapy and crude liver extract. One week before dismissal he developed severe pain in the left shoulder. This pain continued unabated until dismissal. He was dismissed unimproved on March 4, 1950.

#### Etiology

There is little agreement among workers in this field as to the etiologic factors of diabetic neuropathy. Some clinicians believe the disorder is a senile degenerative change resulting from the sclerosis of peripheral arteries. As many more rule out this theory by claiming therapeutic changes that improved the subjective symptoms and objective signs of many patients suffering from diabetic neuropathy. They point out that such an improvement would not have occurred if sclerosis were the etiologic

factor since it is an irreversible condition. They further state, ". . . insulin is not a factor in the prevention, development, or cure of the neuropathy. Loss of weight seems to be important since 58 per cent (of 100 cases) of our patients with diabetic neuropathy had marked weight loss prior to or during the development of the neurologic symptoms." Rudy and his co-workers observed that all the manifestations of vitamin B deficiency in diabetics develop not only during the acute stage of the diabetes but also soon after the control of the glycosuria and hyperglycemia. They conclude that the disturbed carbohydrate metabolism in some way interferes with the vitamin metabolism and thus brings about the nutritional deficiency which is pathogenic for the development of diabetic neuropathy.

Williams<sup>11</sup> calls attention to the tocopherols as being possible factors in neuromuscular disturbance associated with diabetes. He emphasizes that a small but significant proportion of diabetic neuropathy patients has been benefited from moderate therapy with vitamin E.

Emerson<sup>12</sup> has a logical explanation for the occurrence of diabetic neuropathy. He recalls that at least three of the B vitamins are as essential as insulin in the chain of glucose oxidation and that nerve tissue depends principally on the metabolism of carbohydrate for its function. The vitamin need of diabetic patients appears to vary indirectly with their insulin requirement, or, more properly, with their rate of glucose utilization.

Rundles<sup>2</sup> states, "Our clinical evidence indicates that peripheral nerve disease arises when these metabolic adjustments consequent to insulin deprivation may be paramount but the excessive oxidation of fat possibly leading to peripheral demyelination as well as the protein breakdown which occurs cannot be ignored. A review of the relevant information available justifies the opinion that neither occlusive vascular disease nor a primary or conditioned vitamin B deficiency plays a definite etiologic role. From our own clinical study the conclusion is inescapable that diabetic neuropathy is not only truly 'diabetic' in etiology but results from the abnormal metabolism of chronically unregulated diabetes."

Collens et al<sup>8</sup> state that the neuropathies in diabetes mellitus represent a disturbance in the metabolism of the antineuritic fractions present in vitamin B complex rather than a simple nutritional deficiency of these important components.

An editorial from *Lancet*<sup>13</sup> remarks that diabetic neuropathy is not the direct result of hyperglycemia or ketosis; it may be seen in patients whose diabetes is well controlled by diet and insulin, whereas other patients who were free of neurological signs before

treatment have developed symptoms and signs shortly after treatment was initiated. Inevitably lack of vitamin B<sub>1</sub> has been suggested as the cause; but Needles<sup>14</sup> and Fein et al<sup>15</sup> investigated the diets given to their diabetic patients and found that diabetic neuropathy could occur when the intake of vitamin B<sub>1</sub> was well above normal requirements.

Cobb and Coggeshall<sup>16</sup> believe diabetes should be included with pellagra, beri beri, and cachexia as one of the deficiency and metabolic disorders capable of causing neuritis. Williams and Spies<sup>17</sup> suggest that vitamin B<sub>1</sub> deficiency is the cause of diabetic neuropathy.

Marble<sup>7</sup> does not offer a theory as to the etiology of diabetic neuropathy, but he emphasizes the fact that the use of thiamine or vitamin B complex in extraordinarily large amounts fails to bring about any prompt or dramatic recovery. He feels that if thiamine deficiency is an important factor in diabetic neuropathy, it is dependent upon the metabolic disturbance of uncontrolled diabetes.

Roor<sup>18</sup> believes that uncontrolled diabetes of long duration has some specific effect on nerve tissue, either by a direct metabolic influence or indirectly by means of a dietary deficiency. He admits that thiamine may play a role in diabetic neuropathy but contends that the rate of recovery after vitamin therapy is not always consistent enough to support such a belief.

Jolliffe et al,<sup>19</sup> in discussing the prevalence of various types of nutritional polyneuropathy in diabetic and alcoholic patients, suggested that thiamine deficiency might account wholly or in part for such disorders as bilateral symmetrical polyneuropathy, combined system disease, Wernicke's syndrome, and certain organic reaction psychoses.

Meiklejohn<sup>20</sup> questioned the characterization of thiamine as the so-called "anti-neuritic vitamin." He pointed out that although thiamine therapy remedies the functional metabolic disturbance of nerve tissue produced by lack of this substance, the exact relation of thiamine to the organic changes of polyneuritis is still unknown.

Nutrition Review<sup>21</sup> reveals that polyneuropathy can be produced in different species of animals by diets deficient in riboflavin, pyridoxin, and panthothenic acid only, and can be cured by the administration of these components of the vitamin B complex.

Street<sup>22</sup> found that a diet deficient in thiamine produced irreversible changes (neurologic) in dogs. He had maintained the animals on a partially thiamine-deficient diet until signs of peripheral neuritis developed. Large doses of thiamine chloride given during the following month had no therapeutic effect, and histologic examination revealed degenera-

tion of the peripheral nerves, anterior horns and posterior columns of the spinal cord.

Swank and Bessey<sup>23</sup> observed in pigeons, and Leblond and Chaulin-Serviniere<sup>24</sup> in monkeys, that the nature and extent of neurological changes depended on the degree and duration of the vitamin deficiency. Severe or total deprivation of thiamine caused rapid prostration and death, without neurologic signs or pathologic changes in the nervous system. With partial restriction of thiamine over a considerable period of time, it was possible to produce definite signs and histologic evidence of polyneuropathy.

Williams et al<sup>25</sup> made observations in man similar to those made above in animals. They found that prolonged partial restriction of thiamine produced neurologic disturbances such as weakness and paralysis of the thigh muscles and diminished vibratory sensation. The ankle jerks and knee jerks first became hyperactive, later diminished, and finally disappeared. Early in the experiment, the subjects developed weakness, anorexia, nausea, epigastric distress, and vomiting. Later there appeared marked weight loss, giddiness, apathy, confusion, inactivity, numbness and tingling in the legs. The response of the neuropathy to thiamine therapy was extremely slow. He concluded that polyneuropathy is a manifestation of advanced rather than of early thiamine deficiency.

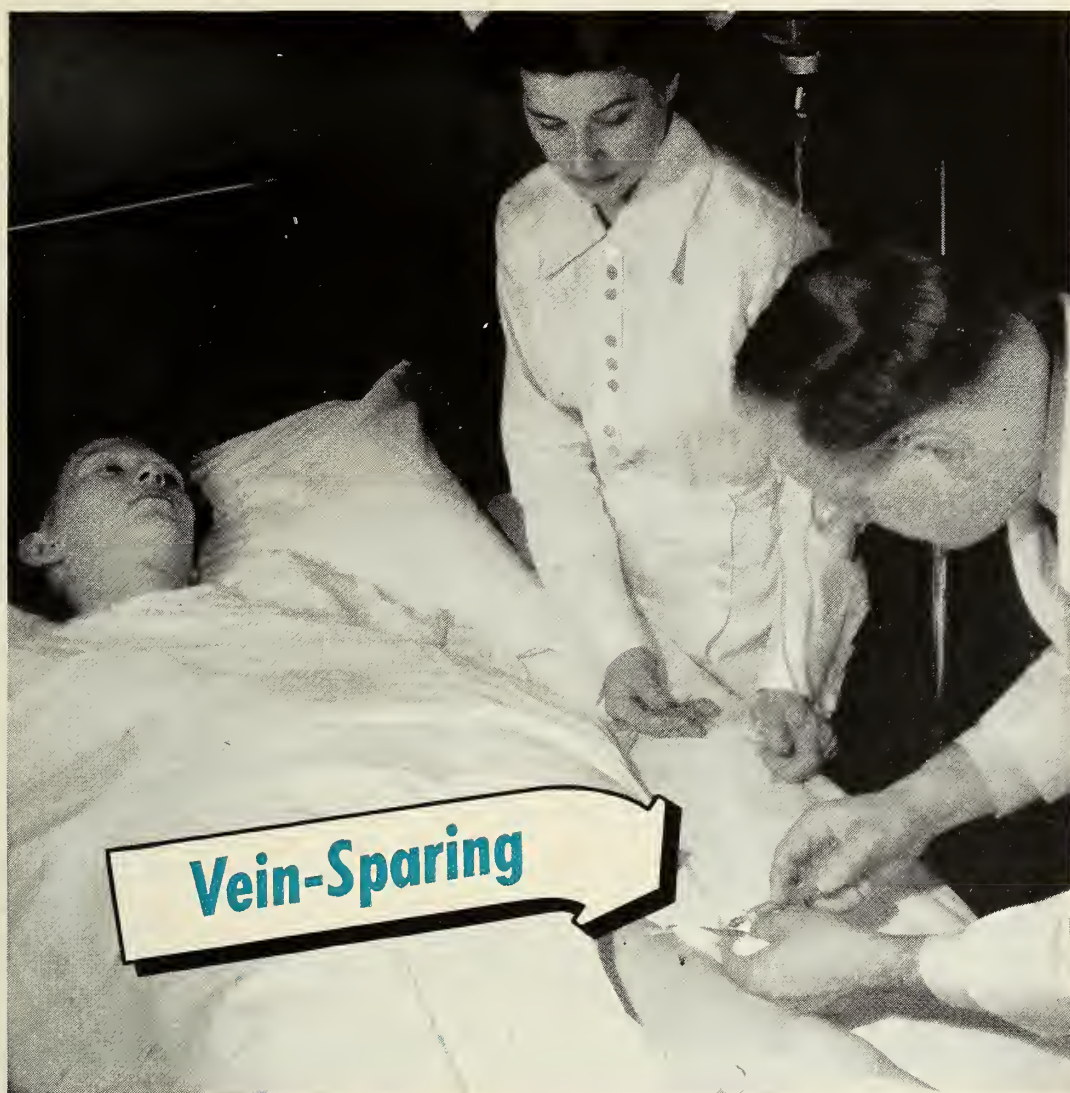
Rudy<sup>26</sup> says that neuropathy in diabetic patients is not the clear-cut syndrome that has been produced in animals and man by diets deficient in vitamins. He feels that the neuropathy is frequently diffuse and disseminated and often presents a bizarre picture. The predominant manifestations may be of cerebral origin or be related to the spinal cord, or may be the result of changes in the peripheral nerves.

#### Pathology

Relatively little is known about the pathology of diabetic neuropathy. This came about because, in its purest form, diabetic neuropathy occurs in individuals under the age of 50. It is not fatal and recovery usually takes place. Therefore, post-mortem study does not commonly occur.

Woltman and Wilder,<sup>27</sup> in a study of the degenerative or circulatory type of neuropathy, described areas of degeneration in the peripheral nerves, more marked distally and associated with thickening of the walls of the nutrient vessels. They, therefore, attributed the nerve changes to arteriosclerosis. Slight changes in the spinal cord, most marked in the posterior columns, were also noted and attributed to arteriosclerosis. However, as emphasized above, typical acute diabetic neuropathy often occurs in patients under the age of 50 years without noteworthy arteriosclerosis and with them the condition





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may be completely reversible, so the evidence is strong that this major type is not due to arteriosclerosis.

Aring<sup>28</sup> states that lesions may be found in the nerve trunks with interstitial reaction in the peri- and endoneurium. Changes may be found in the dorsal roots and columns and also in the ventral horn cells. Changes are occasionally more marked in the intramedullary course of the posterior root. The nerves from the lower part of the legs show greater damage than the nerves from the pelvic level. The greater the vascular disease in diabetes the greater the nerve damage, though nerves have been examined from patients who did not have diabetes but did have arteriosclerosis, and they do not show this pathological change. This is another indication that vascular disease is not the sole cause of diabetic neuropathy.

#### Laboratory Examination

Examination of the spinal fluid shows almost invariably an increase in the protein. Eighty-five per cent of 84 cases reported by Root and Rogers had a spinal fluid protein over 59 milligram per cent. Fifty-two per cent had values ranging between 71 and 120 milligram per cent; and 17 per cent had values between 121 and 390 milligram per cent.

Rundles examined the spinal fluid in 31 patients. Ten fluids were normal. Thirteen had excess total protein ranging from 48 to 80 milligram per cent. The remaining eight patients had severe neuropathy and spinal fluid proteins with values of 268, 364, 426, etc., milligram per cent.

Rudy<sup>26</sup> says that the spinal fluid protein may be elevated in patients with minimal objective evidence of neuropathy. In other diabetic patients with minimal objective evidence of neuropathy, there may be no elevation of spinal fluid protein. In other patients with signs of advanced neuropathy, however, the spinal fluid protein may also be normal or only slightly elevated.

The cellular content, pressure and dynamics are characteristically normal in diabetic neuropathy. The globulin is usually increased. The colloidal gold curve may be slightly elevated, often in the midzone, but may simulate the paretic gold curve with elevation to the left. The severity of neuritis tends to parallel the level of the spinal fluid protein, and clinical improvement is usually accompanied by a decrease in this value.

#### Course

Although the duration of symptoms is variable, the course of diabetic neuropathy is apt to be prolonged, ranging from a few or several weeks to a few or several years. The prognosis is good, in general, especially in the younger age groups, provided that treatment is begun before permanent

nerve damage has occurred. Residual neurologic signs may persist for an indefinite period.<sup>7</sup>

#### Treatment

Aring<sup>28</sup> says that the longer the duration of imperfectly controlled diabetes, the more frequent is the involvement of the nervous system. However, control of the diabetes does not appreciably influence the course of the neuritis, once it has occurred. It seems hardly necessary to note that the diet should contain liberal amounts of the vitamins.

He goes on to say that the use of heat delivered by an electric pad or by warm baths, particularly at night, is the single most useful agent in the relief of pain. Liberal use of acetylsalicylic acid, occasionally bolstered with codein, is a useful adjunct. Ointments, particularly those containing cocaine, applied to the tender and painful parts, are of value.

Weakness and pain may result from the pressure of bed clothes. A cradle should be used to tent such garments over the body. If paralysis is present the limb should be supported by padded splints in a neutral position. For all forms of neuritis that cause weakness, bed exercises are necessary after the period of extreme pain has passed. Gentle passive movements of all the joints involved is a requisite to prevent contracture and fixation. The patient should perform these movements several times daily. The severity of the joint pains which result on passive movement depends somewhat on the fixation that has developed. It forms a rough index for the amount of physiotherapy that is required. Obviously no interference with the mobility of joints should be allowed to develop. Leg crossing should not be allowed in diabetics with neuritic tendencies because of the vulnerability of the peroneal nerves.

Marble maintains that unless the diabetes is brought and kept for a prolonged period under meticulous control, all other attempts at treatment will fail. A thoroughly adequate diet should be provided and protamin zinc insulin should be used. Although no dramatic benefit can be expected, large doses of vitamin B complex should be given.

Collens et al<sup>8</sup> recommend six capsules of vitamin B complex, 30 cc. of elixir vitamin B complex, 300 milligrams of thiamin, and 300 milligrams of niacinamide daily plus crude liver extract.

According to Rundles, administration of insulin is the most effective treatment for diabetic neuropathy.

Rudy and Epstein<sup>6</sup> used vitamin B therapy in addition to precise control of the diabetes in 100 cases. Complete recovery from the neuropathy was uncertain and slow but it occurred. Marked improvement was shown by 72 patients under this regime—by 37 of them in less than six months and by another 29 in six to 12 months. Some cases showed a progression of symptoms in spite of



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treatment. Complete recovery with the total disappearance of the objective signs as well as of the subjective symptoms was observed in several cases. Occasionally there is a recurrence of the neuropathy.

For those who believe that arteriosclerosis is an etiologic factor, Page and Bernhard<sup>29</sup> write that iodine will prevent arteriosclerosis in rabbits fed cholesterol in excessive amounts. Also, according to Roffo,<sup>30</sup> both the eggplant and the Jerusalem artichoke possess the capacity to lower the level of cholesterol in the serum, presumably by increasing its excretion in the bile. Another point of nutritional interest is the correlation between hypoalbuminemia and diabetic retinitis. This is of particular interest in that improvement of the retinitis has been reported following administration of high protein diets.<sup>31</sup> Animal protein is also one of the best dietary sources of potassium and phosphorus upon which the body is dependent for the normal oxidation of carbohydrate. In treatment of diabetic coma with large amounts of glucose and insulin, the demand for phosphorus and potassium may exceed the supply and near deaths have been reported from respiratory paralysis associated with a low serum potassium level.<sup>32</sup>

#### Unusual Manifestations of Diabetic Neuropathy

1. *Neuropathic Foot*: It is believed that the bone destruction seen in neuropathic foot represents a trophic change resulting from diabetic neuropathy. No case has shown any tendency to improve; and the only treatment that has proved helpful has been the use of orthopedic appliances in an effort to relieve weight bearing and thereby help to prevent further deformity. Foster and Basset<sup>33</sup> believe that pathological changes in the posterior columns of the spinal cord so disrupt the afferent impulses subserving the experience of pain, trauma of normal weight bearing, proprioception and defective temperature-regulating, hypotonic arteries and intact motor power to the joints, so that the said joints are hypermotile and predispose the skeletal system to an over-reaction to trauma, with the corresponding development of a joint similar to a Charcot joint. The most striking differences between the true Charcot joint and the neuropathic foot are that Charcot joint rarely affects the foot, Charcot joint presents with acute onset of fluid in the joint whereas this does not obtain in the neuropathic foot, Charcot joint seldom forms new bone whereas this is common in the neuropathic foot, and Charcot joint commonly causes acute pain in its prodromal stage.<sup>34</sup>

2. *Diabetic Nocturnal Diarrhea*: Sheridan and Bailey<sup>35</sup> reported on 40 cases of "diarrhea of diabetes" or "diabetic nocturnal diarrhea." Characteristic of the diarrhea of these patients was its occurrence chiefly or entirely at night. There might be little or no diarrhea during the day, yet the pa-

tient would have 10 to 15 brown, watery stools during the night. It tended to occur intermittently in 85 per cent of the cases with remission lasting for several days followed by relapses. Nocturnal incontinence of feces occurred in 78 per cent. Treatment with a low-residue bland diet, sulfonamides, hydrochloric acid, vitamins, and drugs exerting a constipating effect was of little value. It was found, however, that crude liver extract given parenterally was of definite benefit in controlling diarrhea in 26 of 28 cases in which it was used. They concluded that this diarrheal syndrome probably represented a nerve disturbance of the bowel, possibly involvement of the sympathetic nervous system, on the basis of diabetic neuropathy.

Rundles<sup>2</sup> says that disturbed gastro-intestinal function is a common accompaniment of diabetic neuropathy and one that should be associated with autonomic nerve disease. Two of his patients with nocturnal diarrhea who died were reported pathologically to have degenerative changes in the nerve trunks of the esophageal plexus and about the celiac ganglia. He says there is no clinical evidence to suggest that neuropathy follows diarrhea in sequence, as in some of the deficiency diseases, although the presence of diarrhea and even more the occasionally associated anorexia and nausea make the diabetic status exceedingly difficult to control.

3. *Other Neuropathies*: Abnormal pupillary reaction and genito-urinary disturbances have been reported by several workers in this field. Rundles found that one-fourth of his series of 115 patients with diabetic neuropathy had genito-urinary or sphincter disturbances. An atonic bladder paralysis or so-called "cord bladder" occurred in 18 of this series. The abnormal pupils were, in most instances, miotic, reacting sluggishly to light, better on accommodation. Irregular and unequal pupils were observed. "Non-syphilitic Argyll-Robertson pupils" have been observed. Complete lack of sexual potency was recorded as a complaint in 19 patients of Rundles' series. Urinary incontinence was a complaint of 10 patients.

#### Summary

It seems clear that diabetic neuropathy is a generalized neurologic disturbance. Although the exact etiology is not clear, poor diabetic control seems to be an invariable factor preceding the onset of subjective symptoms. Symptoms and signs of a vitamin B complex deficiency are frequently associated with diabetic neuropathy. The vitamin deficiency is secondary and appears to be caused by the disturbed metabolism of diabetes mellitus. The treatment of choice consists of large doses of thiamine chloride in addition to precise control of the diabetes. The spinal fluid is characterized by an increase in total protein. The eventual prognosis is good, particularly



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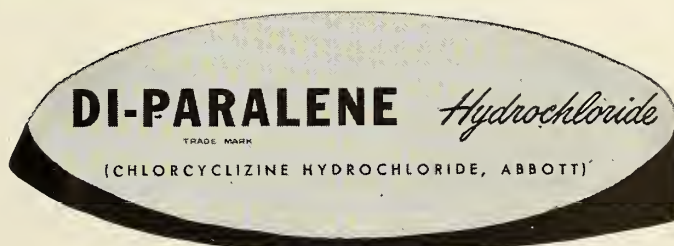
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## BLUE SHIELD

### Benefit Increase August 1

Additional benefits and a slight increase in Blue Shield dues will go into effect for a majority of Blue Shield members August 1. The increases for quarterly, semi-annual and annual paying members will become effective on their first payment dates after August 1. This means that a few members will continue on the old plan at the old rates until July 1, 1952.

#### Eight Benefit Increases

Benefit increases are summarized below:

1. Payment for medical (non-surgical) care in hospital increased to the following basis:

First hospital day ..... None  
 2nd, 3rd and 4th hospital day ..... \$5.00 per day  
 Next 27 days ..... \$3.00 per day  
 Next 60 days ..... \$2.00 per day

2. Accident x-ray allowance increased from \$15 maximum to \$25 per year.

3. Benefits now available for bronchoscopy, esophagoscopy, cystoscopy and gastroscopy.

4. Surgical allowances increased to \$200 on the most complicated procedures such as total cystectomy, craniotomy, pneumonectomy, spinal fusion, etc.

5. Emergency first aid allowance for sprains, minor burns, cuts, etc. (Such minor treatments were heretofore excluded).

6. Payments reinstated for removal of minor skin tumors.

7. Anesthesia allowances increased for the most complicated surgical procedures.

8. Allowances for a few surgical procedures were adjusted upward to bring payment for them into line with other procedures.

#### Higher Income Levels

In response to the rising cost of living and higher incomes generally, Blue Shield will increase service income limits to \$2,000 for single members and \$3,000 for family members. This means that members earning below these amounts will be entitled to services covered by Blue Shield without additional charge by the participating physician.

#### Full Information For Doctors

A revised participating physicians' manual containing full details on the new program will be mailed prior to August 1.

#### Members Well Informed

Information on the need to change both Blue Cross and Blue Shield contracts and dues has been going out to members since March. Rising hospital costs plus increased use of service are the main reasons back of the substantial Blue Cross raise in dues. The service benefit feature of Blue Cross means that members have already been receiving more and more benefits as hospital costs increase. For example, as the use and cost of drugs go up, Blue Cross coverage goes up accordingly. This kind of protection is found only in a plan which does not have dollar limits on costly hospital extras. The slight increase in Blue Shield is due entirely to the additional benefits.

#### New Dues

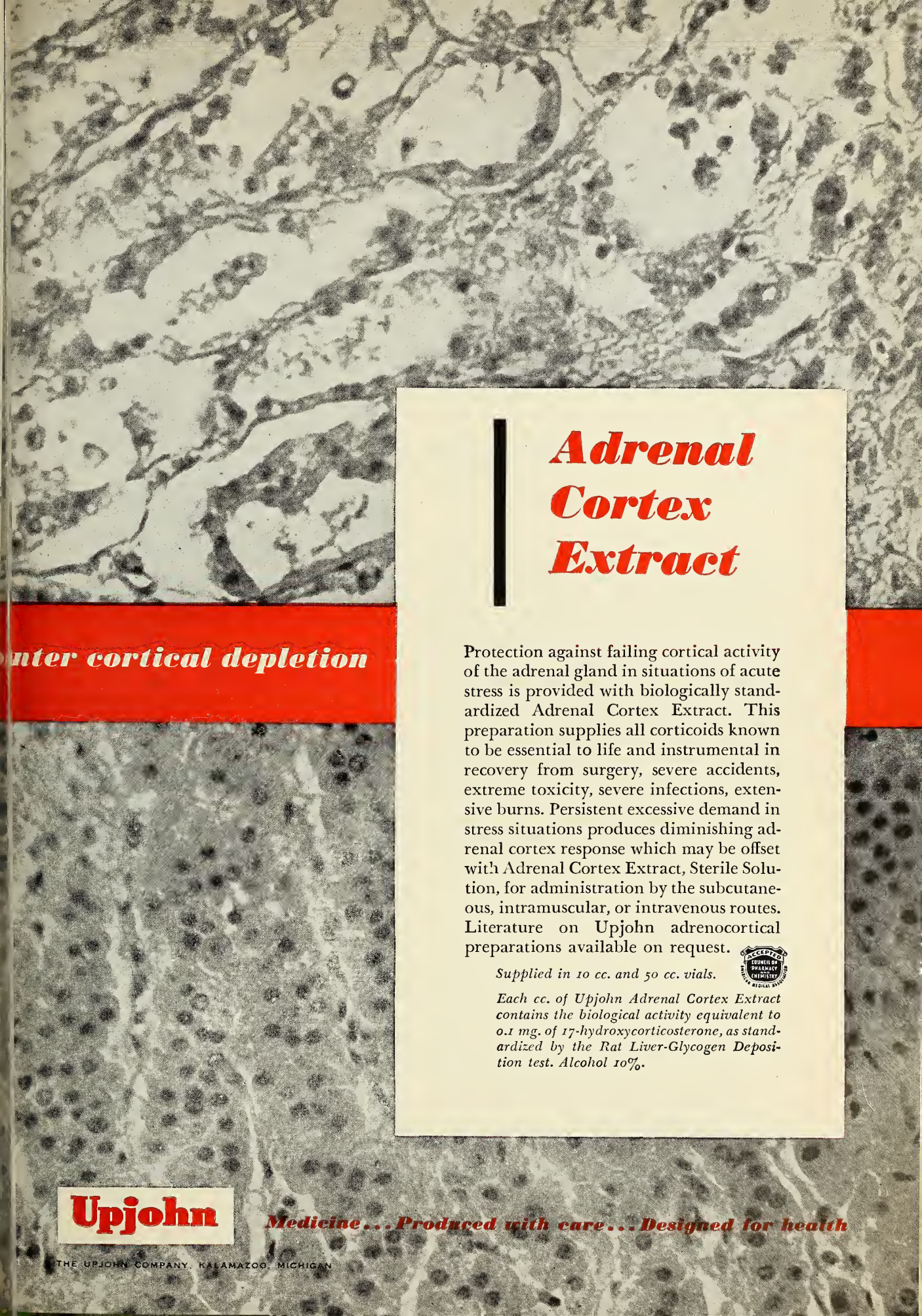
Blue Cross and Blue Shield monthly dues will be as follows:

	Single	Family
Blue Cross		
Community	\$2.15	\$4.30
Group	\$1.80	\$3.60
Blue Shield		
Community	\$1.65	\$3.30
Group	\$1.35	\$2.70

#### Atomic Energy Commission Award

Dr. Robert E. Stowell of the University of Kansas Medical Center was recently awarded a grant by the Atomic Energy Commission for cytochemical, microchemical and biophysical studies of tumors and effects of radiation upon cells. The award covers the period to June 30, 1952.





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***Protection against cortical depletion***

Protection against failing cortical activity of the adrenal gland in situations of acute stress is provided with biologically standardized Adrenal Cortex Extract. This preparation supplies all corticoids known to be essential to life and instrumental in recovery from surgery, severe accidents, extreme toxicity, severe infections, extensive burns. Persistent excessive demand in stress situations produces diminishing adrenal cortex response which may be offset with Adrenal Cortex Extract, Sterile Solution, for administration by the subcutaneous, intramuscular, or intravenous routes. Literature on Upjohn adrenocortical preparations available on request.

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## SOCIALIZED MEDICINE

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*Editor's Note. This is the 20th of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

### Legalized Immorality

The Journal is indebted to the Foundation for Economic Education, Inc., for the following clipping. This is extracted from pages 36-39 of *The Key to Peace*, by Clarence Manion, dean of the College of Law of Notre Dame University. We believe this to be an exceptionally clear and simple statement of a phase of socialism in government.

\* \* \*

It must be remembered that ninety-five per cent of the peace, order and welfare existing in human society is always produced by the conscientious practice of man-to-man justice and person-to-person charity. When any part of this important domain of personal virtue is transferred to government, that part is automatically released from the restraints of morality and put into the area of conscience-less coercion. The field of personal responsibility is thus reduced at the same time and to the same extent that the boundaries of irresponsibility are enlarged.

Government cannot manage these fields of human welfare with the justice, economy and effectiveness that is possible when these same fields are the direct responsibility of morally sensitive human beings. This loss of justice, economy and effectiveness is increased in the proportion that such governmental management is centralized . . .

Government cannot make men good; neither can it make them prosperous and happy. The evils in society are directly traceable to the vices of individual human beings. At its best government may simply attack the secondary manifestations of these vices. Their primary manifestations are found in the pride, covetousness, lust, envy, sloth and plain incompetency of individual people. When government goes far beyond this simple duty and deploys its forces along a broad complicated front, under a unified command, it invariably propagates the very evils that it is designed to reduce.

In the sweet name of "human welfare" such a government begins to do things that would be gravely offensive if done by individual citizens. The government is urged to follow this course by people who consciously or subconsciously seek an impersonal outlet for the "primaries" of human weakness. An outlet in other words which will enable

them to escape the moral responsibility that would be involved in their personal commission of these sins. As a convenience to this popular attitude we are assured that "government should do for the people what the people are unable to do for themselves." This is an extremely dangerous definition of the purpose of government. It is radically different from the purpose stated in the Declaration of Independence; nevertheless it is now widely accepted as correct.

Here is one example of centralized governmental operation: Paul wants some of Peter's property. For moral as well as legal reasons, Paul is unable personally to accomplish this desire. Paul therefore persuades the government to tax Peter in order to provide funds with which the government pays Paul a "subsidy." Paul now has what he wanted. His conscience is clear and he has proceeded "according to law." Who could ask for more?—why, Paul, of course, and at the very next opportunity. There is nothing to stop him now *except the eventual exhaustion of Peter's resources.*

The fact that there are millions of Pauls and Peters involved in such transactions does not change their essential and common characteristic. The Pauls have simply engaged the government "to do for them (the people) that which they are unable to do for themselves." Had the Pauls done this individually and directly without the help of the government, each of them would have been subject to fine and imprisonment. Furthermore, ninety-five per cent of the Pauls would have refused to do this job because the moral conscience of each Paul would have hurt him if he did. However, where government does it for them, there is no prosecution and no pain in anybody's conscience. This encourages the unfortunate impression that by using the ballot instead of a blackjack we may take whatever we please to take from our neighbor's store of rights and immunities.

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## COUNTY SOCIETIES

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Dr. B. P. Meeker was elected president of the Sedgwick County Society at a meeting held in Wichita on May 8. Other officers chosen are: vice president, Dr. L. K. Nix; secretary, Dr. W. H. Fritze-meier; treasurer, Dr. E. S. Brinton; censor, Dr. George F. Gsell; members of the board of directors for a three-year term, Dr. J. B. Fisher, Dr. R. H. Maxwell, and Dr. L. P. Warren. The officers will be installed on January 8, 1952.

\* \* \*

Dr. G. M. Tice, radiologist at the University of Kansas Medical Center, was guest speaker at a meeting of the Southeast Kansas Medical Society held in Iola, June 13.





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## ACTIVITIES OF MEMBERS

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Dr. Ernest C. Brandsted is now engaged in the practice of obstetrics and gynecology in association with Dr. Weir Pierson in McPherson. Last month he completed a three-year residency in that specialty, two years at Northwestern University, the Cook County Hospital and the Swedish Covenant Hospital in Chicago and one year at the University of Illinois Educational and Research Hospital.

\* \* \*

Dr. Henry S. Blake, Topeka, was named president of the Topeka Council of Social Agencies at an election held last month.

\* \* \*

Dr. J. S. Menaker, Wichita, spoke on "Physical and Mental Health" at a recent meeting of the Kansas State Dental Assistants' Association.

\* \* \*

Capt. E. B. Struxness, formerly of Sterling, who has been stationed in San Antonio, Texas, has been assigned to the air material command of the Far East Air Force in Japan.

\* \* \*

Dr. H. P. Fink, Bucklin, spoke on socialized medicine before a women's club meeting in Bucklin last month.

\* \* \*

Dr. Edwin R. Maier, of the Arkansas City Medical and Surgical Clinic, reported for active duty as a captain in the medical department of the air force at Tinker Field in Oklahoma City on June 30.

\* \* \*

Dr. J. L. Lattimore, Topeka, was speaker at dedication ceremonies at the Smith County Memorial Hospital at Smith Center on June 3.

\* \* \*

Dr. F. F. Lemon, who has been practicing in Douglass since 1916, observed his 50th anniversary in the practice of medicine recently.

\* \* \*

The Meek-Stensaas Clinic, Arkansas City, announces that Dr. Newton C. Smith is now a member of the staff. He was recently discharged from active duty with the Navy.

\* \* \*

Dr. Howard Snyder, Winfield, spoke on cancer control as part of the program for Women's Week at Kansas State College, Manhattan, early in June.

\* \* \*

Dr. H. W. Lane has completed a course of study at Johns Hopkins Hospital in Baltimore and has returned to the Butler-Greenwood-El Dorado health unit, with headquarters in El Dorado.

\* \* \*

Dr. H. L. Bogan, Baxter Springs, announces that

Dr. Dale Alquist is now associated with him in practice. Dr. Alquist has recently been a member of the staff of the Wadsworth Veterans Hospital.

\* \* \*

Dr. V. Dean Schwartz, Wichita, was called to active service with the Army recently and reported at San Antonio, Texas, on June 5.

\* \* \*

Dr. J. T. Swanson, Independence, became a fellow of the American College of Radiology at a convocation of the college in Atlantic City last month.

\* \* \*

Dr. A. B. McConnell, Burlington, gave a talk on health before the Rotary Club in that city recently.

\* \* \*

Dr. J. E. Hodgson, Downs, is now beginning his 53rd year in the practice of medicine.

\* \* \*

Dr. William H. Wood, formerly on the staff at the Topeka State Hospital, has been named acting superintendent of the State Training School at Winfield, to serve until a permanent appointment is made.

\* \* \*

Dr. E. V. Thiehoff, chairman of the Department of Public Health and Preventive Medicine at the University of Kansas School of Medicine, has been appointed to the editorial staff of *Excerpta Medica*. His work will be on the section on medical microbiology and hygiene.

\* \* \*

Dr. Bert Stofer, Wichita, was guest speaker at a meeting of the Sedgwick County Medical Assistants' Society held in Wichita, June 20.

\* \* \*

Dr. D. M. Treger, who has been practicing in Medicine Lodge since 1949, has begun a three-year residency in general surgery at Sacred Heart Hospital, Allentown, Pennsylvania.

\* \* \*

Dr. Paul W. Schafer, professor of surgery at the University of Kansas Medical Center, was one of the guest speakers at the annual meeting of the Minnesota State Medical Association in May. He later addressed the Ogden Surgical Society, Ogden, Utah.

\* \* \*

Dr. Clarence Gripkey, Kansas City, spoke on "Progress in Treatment of Polio" at a meeting of 35 eastern Kansas chapters of the National Foundation for Infantile Paralysis, held in Kansas City on June 14.

\* \* \*

Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, was elected a member of the Council on Medical Education and Hospitals of the American Medical Association by the House of Delegates of the A.M.A. at Atlantic City, June 14.



# MEAT in the Dietary Treatment of Ulcerative Colitis...

Of utmost importance in treating ulcerative colitis is the support of the nutritional state of the patient with a diet providing generous amounts of protein, vitamins, minerals and calories but giving a minimum of intestinal residue.<sup>1,2</sup> Studies have shown that the most urgent nutritional need is for protein.<sup>3</sup> Other investigations have disclosed that patients with colitis display abnormally low serum levels for almost every vitamin.<sup>4</sup> Since most of these patients have anorexia, tempting food is essential for stimulating the appetite.

In particular, meat offers distinct advantages in maintaining the nutritional status and vigor of the colitis patient. Meat furnishes an abundance of protein, B complex vitamins and iron. Its protein contains all the indispensable amino acids in biologic proportions for growth and repair of tissues. Its B vitamins include thiamine, riboflavin, pyridoxine, niacin, and the recently discovered B<sub>12</sub>. Being almost completely digestible, meat yields negligible intestinal residues which are non-irritating and non-stimulating to the intestinal musculature.

Another feature of meat in the diet of the patient with ulcerative colitis is its appetite-stimulating value for overcoming anorexia and promoting the digestive processes. In a widely used low-residue colitis diet,<sup>2</sup> providing from 60 to 80 Gm. of protein, 120 Gm. of meat and 10 Gm. of crisp bacon are included.

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1. Mann, G. V., and Stare, F. J.: Nutritional Needs in Illness and Disease, J.A.M.A. 142:409 (Feb. 11) 1950.

2. Barborka, C. J.: Treatment by Diet, ed. 5, Philadelphia, J. B. Lippincott Company, 1948, pp. 538-547.

3. Welsh, C. B.; Adams, M., and Wakefield, E. G.: Metabolic Studies on Chronic Ulcerative Colitis, J. Clin. Investigation 16:161, 1937.

4. Bercovitz, Z., and Page, R. C.: Metabolic and Vitamin Studies in Chronic Ulcerative Colitis, Ann. Int. Med. 20:239 and 254, 1944. Mackie, T. T.; Eddy, W. H., and Mills, M. A.: Vitamin Deficiencies in Gastro-Intestinal Disease, Ann. Int. Med. 14:28, 1940.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.



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Dr. Karl Menninger, Topeka, was guest speaker at a recent meeting of the Topeka Real Estate Board.

\* \* \*

Dr. C. Henry Murphy has returned to the city-county health department in Wichita after a year's absence during which he took postgraduate work at Harvard University and earned a master's degree in public health.

\* \* \*

Dr. Tom R. Hamilton, professor of microbiology and pathology at the University of Kansas School of Medicine, presented a paper, "Carditis and Pulmonary Arteritis in Monkeys," at a recent meeting of the American Society for Experimental Pathology in Cleveland.

\* \* \*

Dr. E. E. Brooks, who has practiced at Burden 43 years, was honored by the community at a "Dr. Brooks Day" on June 24. The main address was given by Governor Edward F. Arn.

\* \* \*

Dr. William P. Williamson was recently named chief of the section of neurosurgery at the University of Kansas School of Medicine, succeeding Dr. Frank R. Teachenor. Dr. Teachenor will continue teaching and clinical research at the university.

\* \* \*

Dr. Paul L. Beiderwell, Belleville, was the subject of a feature story in the Belleville Telescope on June 21.

\* \* \*

Dr. G. M. Edmonds, Horton, announces that Dr. Charles N. Harvath is now a member of the staff of the Horton Clinic. Dr. Harvath, a graduate of Northwestern University Medical School in 1944, served several years in the Army and has been practicing in Phoenix, Arizona, during the past three years.

\* \* \*

Dr. Robert E. Stowell became chairman of the department of pathology and oncology at the University of Kansas School of Medicine on July 1, succeeding Dr. Harry R. Wahl, who will continue teaching as professor of pathology.

\* \* \*

Dr. Dwight Lawson, Topeka, was recently elected to the board of directors of the Shawnee Guidance Center.

\* \* \*

The Dodge City Medical Center announces that Dr. Paul Hornung became a member of its staff on July 1, specializing in obstetrics and surgery. He is a graduate of the University of Kansas School of Medicine.

\* \* \*

A feature story in the Minneapolis Messenger on

June 21 paid tribute to Dr. E. J. Haerle, who has practiced in Minneapolis for 33 years.

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## THE KANSAS PRESS LOOKS AT MEDICINE

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### Many Are Opposed

Some of the proponents of national compulsory health insurance have poooh-pooohed the idea that this grandiose scheme would inevitably lead to socialized medicine. It would do nothing of the sort, they argue—it would just make it easier for people to meet their medical bills, by taxing them in advance.

Well, a great many million Americans seem to think otherwise. For example, an extraordinarily large number of national organizations have gone on record against mixing government and the practice of the healing arts. These include, according to a recent report, the American Legion, the American Bar Association, the American Farm Bureau federation, the conference of small business organizations, the Veterans of Foreign Wars, the general federation of women's clubs and, literally, about 10,000 other groups.

What is the cause of all this opposition to compulsory health insurance? Primarily, it is based on the fact that the proposed law would control patients, physicians and nurses through government administrators and that it would control the money and determine how and in what amounts it would be used. As anyone with even a sketchy knowledge of government operation knows, when bureaucrats are given vast powers, along with authority over purse strings, socialism isn't far off.

In every nation which has tried government-controlled medicine, certain results have followed. The quality of care has gone down, there has been a sharp decline in medical education and medical research—and the total cost, as measured in the tax bills, has soared. Can anyone honestly believe it will work differently in this country?—*E. T. L. in Emporia Gazette, May 12, 1951.*

\* \* \*

### Medical Lobby Buys "Canned Editorial"

A fortnight ago an editorial in LABOR told how a long-established propaganda agency in Portland, Ore.—E. Hofer and Sons—has been serving as a "pipe line" for the Power Trust's viewpoint.

This week, the Committee for the Nation's Health revealed that the American Medical Association is another of the country's major lobbies financing the Hofer propaganda.

An analysis of the A.M.A.'s own reports of lobby expenditures shows, the committee said, that the "Doctors' Trust" paid \$14,400 in 1950 to E. Hofer & Sons "to send free 'canned' editorials to small



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daily papers and weeklies, propagandizing against the President's national health insurance program."  
—*Kansas City Labor Bulletin*.

\* \* \*

#### Tobacco Vs. Medical Care

The average American family spends 15 per cent of its annual income on liquor, recreation and tobacco. This is a big slice of the family budget but so far no one has come up with a scheme for the Federal government to provide "free" excursion trips for everybody to their favorite bar and tobacconist's.

There is much talk of the heavy burden of medical expense to the average family. Yet only four per cent of the average family income goes to pay doctor bills. Most American families have the resources to pay for adequate medical care if they would give it the priority it deserves.

We don't want or need compulsory health insurance. It would result in a tragic deterioration of the present high standards of our medical profession. Its cost to the nation both in dollars and personal liberty would be intolerable. Under Great Britain's National Health Service some doctors have as many as four thousand patients on their lists and often see as many as twenty patients an hour—one every three minutes. This inferior assembly line service costs the English people twice what was budgeted for it in its first year of operation. Some 400,000 additional employes—clerks, administrators, book-keepers, and tax-collectors siphon off millions of dollars of the medical funds before they can be used to provide any medical care for the people.

In the United States voluntary health insurance plans will soon protect 75 per cent of our population. This is the irrefutable answer to the wasteful and inefficient centralized system of compulsion now proposed—a system which would be detrimental to medical science and the health of the people, and which would rob both doctor and patient of their individual freedom.—*Delphos Republican*, May 31, 1951.

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## BOOK REVIEWS

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*A Textbook of X-ray Diagnosis by British Authors in Four Volumes, Volume 1, Head and Neck. Second edition. Edited by S. Cochrane Shanks and Peter Kerley. Published by W. B. Saunders Company, Philadelphia. 343 pages, 439 illustrations. Price \$12.*

This is one volume of a four volume set of books on x-ray diagnosis by British authors. The type, format and composition of this volume match other volumes previously reviewed. Material covered is inclusive and presentation is concise. The volume is a worthwhile member of the set of four books.—*H.H.D.*

*Textbook of Medicine. Edited by Russell L. Cecil and Robert F. Loeb. Published by W. B. Saunders Company, Philadelphia. 1627 pages, 40 tables, 204 figures. Price \$12.*

The editorial staff has been enlarged to include Dr. Robert F. Loeb as co-editor and Doctors Alexander Gutman, Walsh McDermott and Harold Wolff as associate editors.

The general outline of the previous issue has been retained. In order to keep abreast of the current theories, discoveries and concepts, 20 new subjects have been added. Material has been transposed and rewritten to stress physiological, biochemical and psychological aspects. The new subjects include beryllium poisoning, Q fever and an introduction to collagen diseases.

The discussion on infection monomyelosis has been transferred from the section on Diseases of Unknown Etiology to that on Viral Diseases. Erythemas have been moved to Diseases of Allergy. Disseminated lupus erythematosus, dermatomyositis, periarteritis nodosa and scleroderma have been grouped under Collagen Diseases. Rheumatic fever and rheumatoid arthritis, although described elsewhere, are listed under Collagen Diseases.

Fields of internal medicine receiving the greatest impetus in the past several years required the most revision. Endocrinology with emphasis on the pituitary and adrenal glands leads the parade. Cortisone and ACTH therapy, indications, effects, side effects and dosages are discussed under the treatment of rheumatoid arthritis.

The authors include the use of protein-bound iodine as a diagnostic procedure, radioactive iodine for the treatment of hyperthyroidism and streptomycin and PAS in the treatment of tuberculosis.

In addition the book is more compact by 136 pages without sacrifice of important material.—*H.W.V.*

\* \* \*

*Principles and Practice of Obstetrics. Tenth edition. By J. P. Greenhill. Published by W. B. Saunders Company, Philadelphia. 1020 pages, 864 figures, 194 in color. Price \$12.*

This is a revised and up-to-date edition of one of the standard textbooks of obstetrics with excellent illustrations.—*R.L.N.*

\* \* \*

*Proceedings of the Second Clinical ACTH Conference. Volume 1, Research, 531 pages, 276 figures, 52 tables. Volume II, Therapeutics, 716 pages, 311 figures, 81 tables. Edited by John R. Mote. Published by the Blakiston Company, Philadelphia. Price \$8.50 each volume.*

These volumes consist of 102 papers presented at the Armour Second Clinical ACTH Conference at Chicago, December 8 and 9, 1950. They repre-





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sent essentially the year's contribution in fundamental research and experience in therapy with ACTH and adrenal corticoids.

The authors of these papers compose the leading contributors to this new and dramatic field of medicine. A wide range of diseases demonstrating treatment response is discussed, such as arthritis, myasthenia gravis, multiple sclerosis, nephrotic syndrome, alcoholism, anemias, malignancies, burns, tuberculosis, typhoid fever, bronchial asthma, poisonous bites, ulcerative colitis, skin diseases, collagen diseases and eye diseases. And a surprisingly large number of these is reported as showing favorable response to therapy.

One of the most valuable features of these reports is the discussion following each paper—often by a "rival" investigator or therapist. Liberal pertinent bibliographic references are listed.

Since ACTH and the adrenal corticoids are more available today and at lower costs, more physicians will want to try these new medications. Nowhere could one find better scientific and responsible foundation for their usage than in these two very valuable volumes. Here we find uncolored observations and unbiased opinions. These contributions present a complete survey of this most promising addition to therapeutics, all sufficiently authenticated to warrant extensive use of ACTH and the adrenal corticoids clinically.—E.H.H.

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## ABSTRACTS FROM CURRENT LITERATURE

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### Chemotherapy of Tuberculosis

*The Chemotherapy of Tuberculosis.* By Robert G. Bloch and Kirsten Vennesland, *Med. Clin. N.A.*, 35:1, 153-167, Jan., 1951.

Chemotherapy in tuberculosis dates back many years. An inorganic gold compound, sanocrysin, was introduced in 1924, but was largely discontinued because of toxicity and ineffectiveness. Various sulfonamide compounds were tried with doubtful results.

Streptomycin acts in an unknown fashion to produce bacterostatic rather than bactericidal effects on the tubercle bacilli. Careful observation of large series of patients is essential to accurately evaluate the effects of any drug in tuberculosis, and some original reports on streptomycin are undoubtedly exaggerated.

Streptomycin therapy has been most impressive in fresh tuberculous disseminations through the blood stream, especially in generalized miliary tuberculosis. However, only about 20 per cent of treated patients have survived sufficiently long to hope for permanent cure, while in the majority the result has been conversion of an acute infection into a

chronic form. When meningitis is associated, results are even less satisfactory. Here intrathecal injections are recommended, and may result in internal hydrocephalus from fibrinous exudate at the base of the brain.

Localized extrapulmonary tuberculosis, such as tuberculous osteomyelitis and genitourinary tuberculosis, usually responds well. Tuberculous sinuses of the soft tissues respond especially well.

The intracanalicular forms of tuberculosis, comprising essentially lesions of the larynx and bronchi, seem to respond readily. Good results have been reported in tuberculous enteritis. Appearance of these infections means a break-down in the patient's immune resistance, and the important thing is to focus on the source of the flow of bacilli which produced these infections; namely, the cavity in the lung.

Streptomycin, and all other chemotherapeutic agents, are effective only against the comparatively new exudative lesion; it has little or no effect on the old walled-off fibrotic process. Initial treatment in most cases should still be observation at bed rest during which initial reactions can be studied. Chemotherapy can later be fitted into the therapeutic program when indicated.

Streptomycin resistance is a stumbling block in the use of this drug. Tucker showed that 35 per cent of specimens examined after 42 days of therapy were resistant, 50 per cent at the end of 60 days, and 75 per cent at the end of 120 days.

Toxic reactions to streptomycin include pyrexia, vestibular disturbance, loss of hearing, dermatitis, and occasional renal dysfunction. Dosage is an important factor. Initially a daily dose of 2.0 gms. was given for 120 days. In most institutions, this has been reduced to 1.0 gms. for 42 to 60 days. Dihydrostreptomycin shows only a limited degree of lesser toxicity than streptomycin.

This author is of the opinion that minimal fresh exudative noncavitary tuberculosis and even some more extensive involvements need not be attacked by drug therapy at an early date and possibly not at all. The ideal indication for the drug is post-operatively when collapse therapy is carried out by surgical means; it may then prevent fatal complications from introduction of large amounts of infected material into the bronchial system by the collapse process. Because of the known development of streptomycin resistance, the use of the drug must be fitted to the optimal time in the individual case.

Para-aminosalicylic acid was introduced as a therapeutic agent by Lehman. Dose is 10 to 14 gms. daily. Resistant organisms do not appear with nearly the rapidity reported for streptomycin. Animal experiments indicate a moderate to good suppressive effect against experimental disease.



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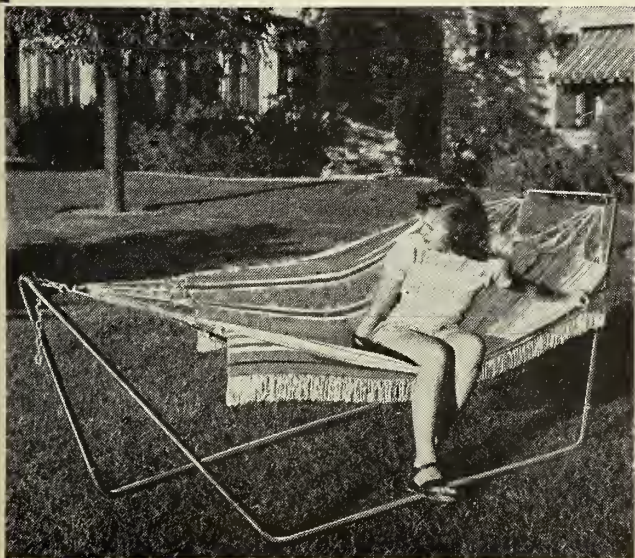
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Combined therapy by streptomycin and para-aminosalicylic acid seems more effective than either alone, and the use of both seems to delay development of resistance to streptomycin.

Tuberculostatic action of the thiosemicarbazones, especially Tbl/698, was reported in 1946. Enthusiastic reports have emanated from Germany, but remain to be confirmed in this country and studies are proceeding with caution because of reported high toxicity.—E.J.R.

\* \* \*

### Breast Feeding and Facial Development

*The Influence of Breast Feeding on Facial Development.* By F. M. Pottenger and Bernard Korhn, *Arch. Ped.*, 67:10, 454-461, Oct. 1950.

1. Development of the zygomatic bones is important to the face for esthetic, protective and functional reasons.

2. Development of the malar prominences of the zygomatic bones was used as an index to facial development.

3. It was found that breast feeding improved the growth of the malar process.

4. Malar processes grew until age 25, at least. The people who were breast fed got off to a head start, and the others never caught up with them.

5. It is advisable to get all mothers into a good state of nutrition and to have them nurse their infants.

6. A large malar prominence is of value, not only for esthetic reasons and because it protects the eye, but also because it is the foundation of a powerful bite.

7. Cases 25 years or over when breast fed in infancy present 70 per cent with larger bimalar measurement, while 27 per cent present the same findings in the bottle fed group.—D.R.D.

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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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## Bone Marrow Biopsy as an Aid In The Diagnosis of Metastatic Malignancy\*

William R. Durkee, M. D., and Sloan J. Wilson, M. D.

Manhattan, Kansas

Kansas City, Kansas

Bone marrow biopsy is extensively used as an aid in the diagnosis of blood dyscrasias, anemias, and primary malignancies of the bone marrow, and has also been found to be of limited value in the diagnosis of metastatic malignancy. There are few reports in the recent literature of its use in the last connection. Sternal marrow puncture may be of definite value in confirming the diagnosis of metastatic malignancy, and in some cases may be instrumental in making the diagnosis of carcinoma.

The possibility of recognizing tumor cells in bone marrow aspirated from the sternum was first studied in 1936 by Rohr and Hegglin.<sup>1</sup> They found tumor cells in 11 of 75 patients with neoplastic disease. Subsequently, as mentioned by Johnson and Rundles,<sup>2</sup> other investigators have identified metastatic tumor cells in aspirated bone marrow. In a study of 140 sternal punctures, Propp and Schwind<sup>3</sup> found secondary neoplastic diseases in 14 instances, the third most common lesion in their series, being exceeded only by the various types of anemia and leukemia. Johnson and Rundles,<sup>2</sup> by carefully selecting the site for marrow aspiration, obtained positive findings in 71 of 152 patients with various types of malignancy. They recommend that an aspiration biopsy be done as a diagnostic procedure for widespread malignant disease, especially when extensive surgery is being contemplated. In an additional publication Rundles and Johnson<sup>4</sup> demonstrated tumor cells by aspiration in the sternal or iliac bone in 17 of 30 patients with carcinoma of the prostate.

When there are widespread metastases to bone marrow, there is frequently an anemia present, the so-called myelophthisic or leuco-erythroblastic anemia; but in some instances there is only evidence of bone destruction radiographically. Cases of thrombocytopenic purpura<sup>5</sup> and hemolytic anemia<sup>6</sup> have also been described. In a series of 100 cases of

malignant disease in which the sternal bone marrow was examined, Kreyberg and Poppe<sup>7</sup> found metastatic cells in seven instances. Vaughan<sup>8</sup> described eight cases out of a total of 55 with a diagnosis of carcinoma as showing malignant cells in the bone marrow, an incidence of 14.5 per cent. However, since these were all examined post mortem, it is not surprising that such lesions were found more commonly.

Brüggemann and Soestmeyer<sup>9</sup> performed 1,000 sternal punctures on 100 cases of cancer (92 carcinomas and eight sarcomas), and found tumor cells in 25 instances. They observed three types of tumor cell colonies in the marrow: (1) large tumor cell colonies with little or no normal marrow tissue, (2) multiple small cell groups, and (3) diffuse disseminated individual tumor cells. Metastases to bone marrow have been reported with many different types of carcinoma, including breast,<sup>6, 7, 8, 10</sup> prostate,<sup>4, 6, 7, 8</sup> stomach,<sup>5, 7</sup> colon,<sup>3, 8</sup> lung,<sup>8</sup> and duodenum (?).<sup>8</sup>

Within the past five years, there have been 11 instances of metastatic malignancy found on sternal bone marrow examinations made at this hospital. The biopsies were done by the aspiration technique. Five of these were done because of the finding of an undiagnosed anemia and two were done because of the presence of destructive bone lesions. Four had both an anemia and bone destruction, but the marrow examinations were done primarily for diagnosis of the type of anemia. The final diagnoses of the malignancies found were as follows:

Carcinoma of the stomach	3
Carcinoma of the breast (proven)	2
(probable)	1
Probable carcinoma of the prostate	1
Probable carcinoma of the lung	1
Melanosarcoma	1
Cancers of undetermined origin	2

\* From the Department of Internal Medicine, University of Kansas School of Medicine.

Although in only one instance, that of the melanoma, was the type of malignancy definitely diagnosable by marrow biopsy, in six others it gave histological proof of the presence of some type of malignancy before the neoplasm had been definitely diagnosed by other procedures. In two of the instances of carcinoma of the stomach, cells with vacuolated cytoplasm, indicating a secretory function, were found, pointing to the correct diagnosis.

#### Report of Cases

Case 1. E. C., a 64-year-old white female, had a left mastectomy for adenocarcinoma of the breast in the summer of 1945, followed by extensive x-ray therapy to the site of operation and later to bone metastases. In April, 1946, following a fracture of the pubis, roentgen examination showed metastases to ribs, right clavicle, and right radius. Blood study showed 1,840,000 red blood cells; 7.5 grams hemoglobin; 4.8 per cent reticulocytes; 2,200 white blood cells with 62 per cent neutrophils, two per cent basophils, 21 per cent lymphocytes, and 10 per cent monocytes; and 132,000 platelets. Because of the anemia, a bone marrow aspiration biopsy was done, revealing replacement of the marrow with metastatic carcinomatous cells (Figure 1). The patient became progressively weaker, and death occurred on August 24, 1946. Autopsy showed extensive metastatic carcinoma in the liver, spleen, bone, pleura, and abdominal lymph nodes.

*Comment.* Bone marrow examination was done in this case to differentiate between an anemia due to depression of the bone marrow by x-ray therapy and one due to carcinomatous invasion. The anemia was due to metastatic lesions.

Case 2. E. D., a 65-year-old white female, was admitted on January 26, 1948, with pain in the

back, shoulders, and hips which had begun one year previously. X-rays had shown areas of destruction in the skull, cervical and dorsal spine, both scapulae, and the pelvis. She had received considerable roentgen therapy without a definite diagnosis having been made. X-ray of the chest at the time of admission showed areas of infiltration in the upper and lower lobes of the right lung. Blood study showed 3,370,000 red blood cells; 9.4 grams hemoglobin; 8,600 white blood cells with 86 per cent neutrophils, six per cent lymphocytes, and six per cent monocytes. Sternal marrow aspiration biopsy showed large cells with deeply staining cytoplasm entirely foreign to normal marrow, considered to be metastatic malignant cells, the origin indeterminate. Further studies failed to elucidate the site of the primary neoplasm, and the patient was given more roentgen therapy to bone. She was dismissed on February 9, 1948, and died at home a few months later. Permission for a post mortem examination was not obtained.

*Comment.* Bone marrow examination was also done in this case to determine if the previous x-ray therapy had caused the anemia. The anemia was caused by replacement of marrow tissue by malignant cells.

Case 3. G. F., a 51-year-old white male, was admitted on April 1, 1948, with painless hematuria for one month, and anorexia with 30 pounds weight loss in four months. Examination showed cachexia, generalized abdominal tenderness, and an enlarged liver. Chest roentgenogram showed enlarged peritracheal nodes on the right with a hilar mass on the left. Blood study showed 1,210,000 red blood cells; 15 per cent reticulocytes; 4.2 grams hemoglobin; 6,100 white blood cells with 64 per cent neutro-

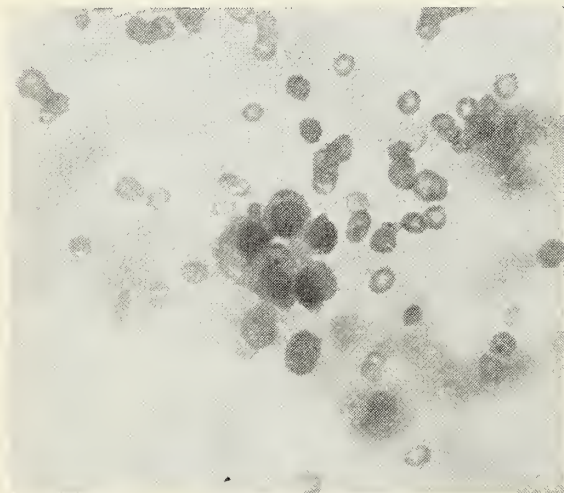


Figure 1. Case 1, E. C. Bone marrow aspiration biopsy showing a group of metastatic cells from an adenocarcinoma of the breast (X 440).

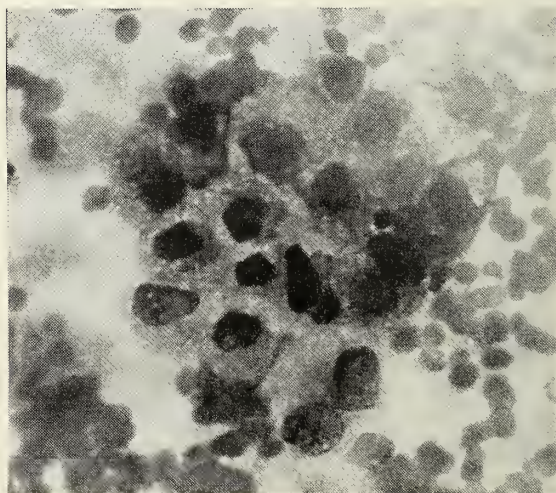


Figure 2. Case 3, G. F. Bone marrow aspiration biopsy showing a group of metastatic cells from an anaplastic carcinoma of the stomach (X 440).



philes, one per cent basophiles, two per cent eosinophiles, 14 per cent lymphocytes, two per cent monocytes, 10 per cent metamyelocytes, and seven per cent myelocytes; and 32,000 platelets. Sternal marrow aspiration biopsy showed the marrow to be entirely replaced by malignant cells with vacuolated cytoplasm indicating cells of a secretory type, an occasional cell almost approaching the signet type (Figure 2). His hospital course was rapidly downhill with death occurring on April 8, 1948. Autopsy showed an anaplastic infiltrating carcinoma of the stomach with metastases to lungs, liver, bone marrow, and lymph nodes in the abdomen and hilar region.

*Comment.* The bone marrow examination established the diagnosis of malignancy in this case, and the cell type pointed to an adenocarcinoma. The final diagnosis at autopsy was carcinoma of the stomach. The hematuria was probably due to the thrombocytopenia.

Case 4. V. J., a 41-year-old white female, was admitted to another hospital on November 26, 1948, with complaints of weakness for three months, pain in the lower back for two months, diplopia on looking to the left for one month, and epistaxis for three weeks. She had noted a lump in the right breast one year previously. Examination showed a large mass in the upper outer quadrant of the right breast, fixed to the underlying bone. Right axillary nodes were present. Blood study showed 2,360,000 red blood cells; 6.6 grams hemoglobin; 7,300 white blood cells with 65 per cent neutrophils and 35 per cent lymphocytes; and 35,000 platelets. Sternal marrow aspiration biopsy showed aggregates of cells foreign to normal marrow with varying sized nuclei. These cells were considered to be metastatic from a malignancy of unknown type. The patient received x-ray therapy to the right breast and pelvis with little improvement.

*Comment.* The bone marrow was examined because of the anemia and thrombocytopenia, and confirmed the diagnosis of metastases from the malignancy in the right breast.

Case 5.<sup>11</sup> B. J., a 38-year-old white female, was admitted March 25, 1949, with pain low in the chest bilaterally and in the thoracic region of the back for five weeks, fever, and a dry cough. She had had recurrent epigastric distress relieved by eating for the previous three years, and a barium meal in the summer of 1948 had shown a peptic ulcer. It is not known whether it was in the stomach or duodenum. With the present illness she had begun to vomit everything except milk, and vomited blood once. Examination showed marked dyspnea, generalized dullness and increased breath

sounds throughout both lungs, and an enlarged liver. X-ray of the chest showed extensive soft infiltration throughout both lung fields. Blood study showed 2,330,000 red blood cells; 5.4 per cent reticulocytes; 6.8 grams hemoglobin; and 21,800 white blood cells with 34 per cent neutrophils, 36 per cent eosinophiles, nine per cent lymphocytes, two per cent monocytes, seven per cent metamyelocytes, nine per cent myelocytes, one per cent eosinophilic metamyelocytes, and two per cent eosinophilic myelocytes. Sternal marrow aspiration biopsy showed aggregates of cells foreign to marrow having the appearance of metastatic cells. The cytoplasm was vacuolated indicating the cells were of a secretory nature (Figure 3). Death occurred on March 30, 1949. Post mortem examination showed a malignant ulcer of the stomach with metastases to both ovaries, abdominal lymph nodes, and the pancreas, and lymphatic spread in both lungs.

*Comment.* Bone marrow examination made the diagnosis of carcinoma whereas eosinophilic granuloma of the lungs had been considered previously. Again the vacuolated cytoplasm of the metastatic cells indicated an adenocarcinoma. The final diagnosis at autopsy was adenocarcinoma of the stomach.

Case 6. H. S., a 57-year-old white male, was admitted on November 29, 1949, with weakness, anorexia, and dyspnea. For 29 years he had had epigastric discomfort and pain relieved by food, but he began to have nausea and vomiting in April, 1949. In August, 1949, he was operated with an incision made in the pylorus and no pathology noted. In September, 1949, a gastroenterostomy was done but he continued to get worse. Examination showed cachexia, a right supraclavicular node, and a hard, movable, lobulated mass in the epi-

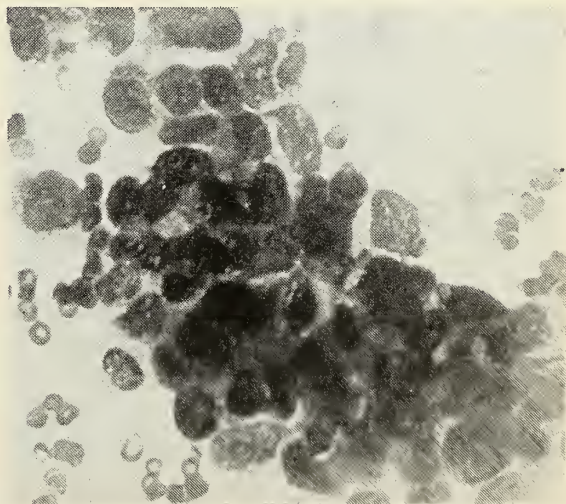


Figure 3. Case 5. B. J. Bone marrow aspiration biopsy showing a group of metastatic cells from an adenocarcinoma of the stomach (X 440).



gastrium. Barium meal was done with difficulty; it showed a gastroenterostomy and probably an intrinsic lesion involving the stomach distal to the point of anastomosis. X-ray of the chest showed a lymphatic dissemination throughout both lungs, probably from a malignant process. Blood study showed 3,280,000 red blood cells; 4.6 per cent reticulocytes; 7.4 grams hemoglobin; and 8850 white blood cells with 57 per cent neutrophils, two per cent basophils, 26 per cent lymphocytes, six per cent monocytes, two per cent metamyelocytes, and seven per cent myelocytes. Sternal marrow aspiration biopsy showed entire replacement with cells of a malignant type, entirely foreign to normal marrow. Biopsy of the supraclavicular node showed anaplastic carcinoma with a tendency to arrangement in an alveolar pattern. Death occurred on December 10, 1949, and autopsy was not permitted.

*Comment.* The origin of the carcinoma was probably stomach although the gastroenterostomy prevented adequate visualization by barium examination.

Case 7. L. P., an 84-year-old white male, was admitted on March 22, 1950, with weakness and dyspnea for two years, and an anemia discovered two months previously. Examination showed grade two enlargement of the prostate with a hard inferior lateral lobe. Blood study showed 2,030,000 red blood cells; two per cent reticulocytes; 7.2 grams hemoglobin; 3950 white blood cells with 45 per cent neutrophils, two per cent eosinophils, 43 per cent lymphocytes, and 10 per cent monocytes; and 140,000 platelets. Sternal marrow aspiration biopsy showed large areas of small cells with considerable cytoplasm and pyknotic nuclei, entirely foreign to normal marrow, and thought to be malignant.

With this finding, complete x-ray examinations were done without finding a primary source. Because of the prostatic nodule, a transurethral resection of the prostate and an orchiectomy were performed, but the pathological examination of the prostatic tissue showed only adenomyomatous hyperplasia.

*Comment.* The source of malignancy was not found despite complete clinical examinations, but the bone marrow study established the type of anemia.

Case 8. R. R., a 48-year-old white male, had noticed scintillating scotomata in 1948, a melanoma of the left eye was found, and this eye was enucleated. He was well until July, 1950, when he developed back pain and anemia. Metastatic destruction was found by x-ray in the lumbar spine, and masses were found in the anterior mediastinum. A sternal marrow aspiration biopsy in August, 1950, was grossly black and microscopically showed neoplastic cells, many of which contained melanin. Melanuria had been present since August, 1950, and he was admitted to the hospital December 23, 1950, with cardiac decompensation. Blood study showed 3,400,000 red blood cells; 4.4 per cent reticulocytes; 9.5 grams hemoglobin; 8900 white blood cells with 76 per cent neutrophils, one per cent eosinophils, one per cent basophils, 12 per cent lymphocytes, eight per cent monocytes, one per cent metamyelocytes, and one per cent myelocytes; and 220,000 platelets. Course was rapidly downhill with death on January 12, 1951.

*Comment.* Melanoma had already been proved in this case, but the sternal marrow biopsy afforded confirmation of the cause of the anemia and areas of bone destruction.

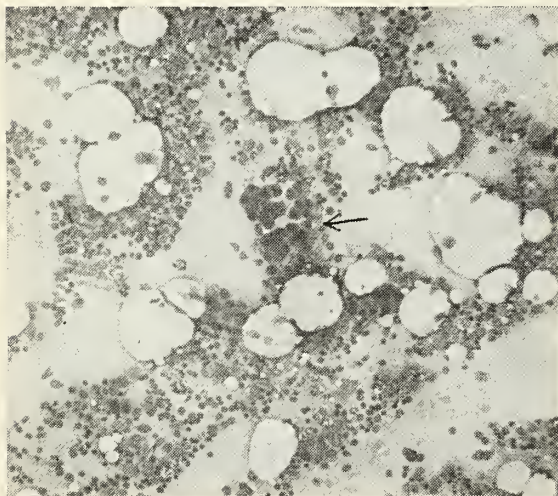


Figure 4. Case 9, W. T. Bone marrow aspiration biopsy showing a group of metastatic cells, probably from a carcinoma of the breast (X 100).

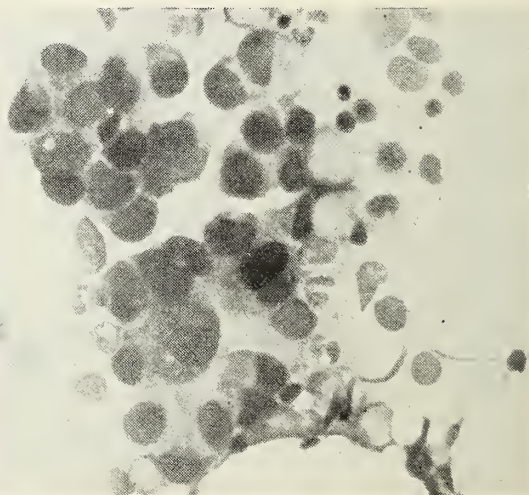


Figure 5. Case 9, W. T. Bone marrow aspiration biopsy (X 440).



Case 9. W. T., a 62-year-old white female, was admitted on September 14, 1950, with pain in the left shoulder and arm for nine months. She had had a salpingectomy for some type of tumor in 1915, a right simple mastectomy in 1931, and a left simple mastectomy in 1941. No malignancy was reported on either of the latter two operations. Examination was essentially negative. Roentgenograms showed destruction in the left clavicle, several ribs, pelvis, both femurs, and skull. Gastro-intestinal x-rays and pyelograms were negative. Blood study showed 3,910,000 red blood cells; 11.2 grams hemoglobin; and 10,050 white blood cells with 73 per cent neutrophils, 22 per cent lymphocytes, and five per cent monocytes. Sternal marrow aspiration biopsy revealed aggregates of large cells with abundant cytoplasm, considered to be malignant, scattered throughout the marrow tissue. (Figures 4 and 5.)

*Comment.* Marrow examination was done in an attempt to find the cause for the areas of bone destruction, and ruled out multiple myeloma. It is probable that the source of the malignancy was one of the breast lesions although it was not reported at the time of operation.

Case 10. M. D., a 56-year-old white female, was admitted on October 17, 1950, with loss of sensation in the arms and legs followed by loss of muscle power. In July, 1950, the left side of her neck began to hurt, followed by aching in the shoulders and chest. Examination showed complete anesthesia and paralysis below the fifth cervical segment. X-ray examination showed partial destruction of the fourth and fifth cervical bodies, and bony defects in the skull and both clavicles. Blood study showed 4,910,000 red blood cells; 13.0 grams hemoglobin; and 9950 white blood cells with 75 per cent neutrophils, one per cent eosinophils, 21 per cent lymphocytes, and three per cent monocytes. Sternal marrow aspiration biopsy showed clusters of malignant cells of unknown origin, entirely foreign to normal marrow (Figure 6). The patient was given roentgen therapy to the cervical area with some bone production, and she was able to walk for a short while. However, loss of motion recurred. Further studies to localize the primary lesion have been impossible because of the patient's condition.

*Comment.* Marrow examination made the diagnosis in this case, and eliminated multiple myeloma, which had been strongly considered.

Case 11. L. S., a 58-year-old white male, was admitted on January 15, 1951, with repeated epistaxis and an anemia since September, 1950, and a persistent cough, increasing fatigue, and anorexia since August, 1950. He had lost 35 pounds in that

time. He had had attacks of chest pain, diagnosed as myocardial infarctions, in July, 1946, and March, 1949. Examination showed left supraclavicular lymphadenopathy, decreased resonance to dullness with diminished breath sounds in the entire left chest, hepatomegaly, and purpuric spots on both legs. X-ray of the chest showed opacities involving both the upper and lower portions of the left lung, having the appearance of atelectasis. There was breakdown in the inferior portion of the upper opacity. Gastro-intestinal studies and pyelograms were negative. Blood study showed 1,820,000 red blood cells; 7.1 per cent reticulocytes; 5.4 grams hemoglobin; 5800 white blood cells with 58 per cent neutrophils, one per cent eosinophils, 26 per cent lymphocytes, seven per cent monocytes, three per cent metamyelocytes, and five per cent myelocytes; and 26,000 platelets. Sternal marrow aspiration biopsy showed the entire marrow infiltrated and replaced by cells of a malignant type, foreign to normal marrow. An occasional vacuole in the cytoplasm of these cells suggested a secretory nature of the cells of origin.

*Comment.* The carcinoma in this case was thought to originate from the left lung, since no other primary site was found.

#### Discussion

During the five years covered by this study, we have become progressively more aware of the possibility of finding metastatic tumor cells by the marrow aspiration biopsy technique. Five of the 11 biopsies revealing metastases were done in the last year. It is our feeling that any unexplained anemia in a patient in the age group in which malignancy may be found should have a bone marrow biopsy as a part of the diagnostic procedure.

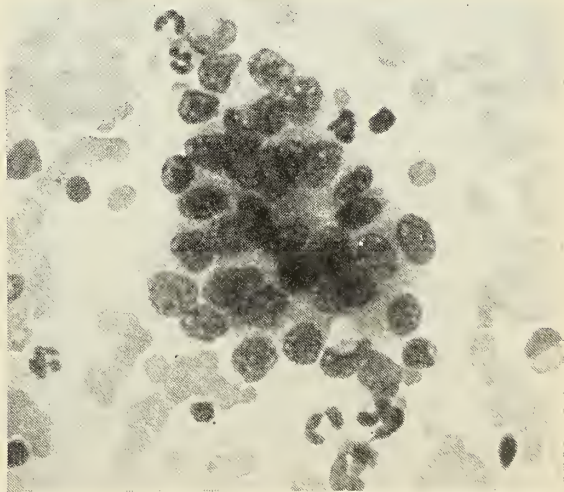


Figure 6. Case 10, M. D. Bone marrow aspiration biopsy showing a group of metastatic malignant cells, origin unknown (X 440).

dures. A marrow biopsy should also be done in all instances in which there are destructive bone lesions and the diagnosis is in doubt. The destructive lesions in the bone in metastatic malignancy, as demonstrated by x-ray, often can not be differentiated from those of multiple myeloma, and the marrow aspiration biopsy is one of several diagnostic means available to arrive at the correct diagnosis. The biopsy need not be in a known area of destruction, as is shown by several of these cases. In some instances, the marrow was almost completely replaced by the malignant cells, while in other instances the metastatic cells occurred only in small isolated groups which required diligent search. Although the bone marrow findings did not alter the prognosis in any of these cases, as would be expected, they did serve to make the clinical management of the cases more intelligent.

#### Summary

Eleven cases of metastatic malignancy showing neoplastic cells on sternal marrow aspiration biopsy are reported, the primary sites being located in the breast, stomach, lung, and probably prostate, with one melanosisarcoma.

Bone marrow aspiration biopsy is advisable in

individuals with anemia of unknown origin.

Marrow biopsy is indicated in cases with multiple bone lesions in which multiple myeloma and metastatic malignancy must be differentiated.

Aspiration biopsy of bone marrow is recommended as a diagnostic procedure for the presence of widespread malignant disease, particularly when extensive surgery is being contemplated.

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## A Clinical Report on the Relief of Headaches Non-Responsive to Analgesics

Charles K. Shofstall, M.D.,\* William H. Shofstall, M.D.\*\*

Kansas City, Kansas

Some symptoms commonly encountered in medical practice appear on the surface to be of little consequence. Headaches can be included in this group of symptoms. First, most patients have the tendency to disregard them or to self-medicate with aspirin. However, when the severity or number is such to cause severe discomfort, the patient is finally forced to seek medical attention.

King<sup>1</sup> has observed that the percentage of successful therapeutic results in the treatment of severe headaches can be increased by using proper diagnostic and therapeutic methods. He reported that many patients, when seeking medical relief for severe headaches, receive prescriptions for aspirin, codeine and other analgesics, without deriving any symptomatic relief. It is important to obtain a complete history and make a complete physical examination and indicated laboratory tests so as to ar-

rive at a correct diagnosis. It is also necessary at the same time to relieve the patient of head pain whenever no causative factors can be found. Hence the problem revolves itself around the relief of the headache. It is this type of headache, with no apparent etiology, and resistant to analgesics, that we report on here.

#### Method and Results

The cases reported herein were headaches resistant to ordinary analgesics, and were all of the same pattern. The symptoms reported were typical of the vascular and tension type of headache, with no clinical observations suggestive of gross intracranial pathology. We employed an oral preparation containing one mg. of ergotamine tartrate and 100 mg. of caffeine (Cafergot\*) to treat these headaches symptomatically. The 33 patients treated were of both sexes and ranged in age from 16 to 59 years.

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\*\*Instructor in Otolaryngology, University of Kansas Medical Center.

\*Formerly known as Cafergone.



After taking a complete history and making a thorough physical examination to try to determine the etiological factors, Cafergot was prescribed in these cases. Instructions were that the drug should be taken at the first sign of an impending attack. The average effective dose was found to be two tablets with a few patients being able to abort their attacks with one tablet. Another group of patients was given a vagal inhibitor plus phenobarbital (one tablet) to be taken with the vasoconstrictor agent, Cafergot.

Our experience confirms that of other investigators<sup>1, 2, 3</sup> that this medication must be taken at the first sign of attack in order to obtain optimum benefits.

Most vascular headaches of the migraine type have some prodromal manifestation. Optimal therapeutic results are obtained if the drug is taken at this stage. When the prodromal signs are absent, medication is most effective if taken at the inception of the headache. Cafergot should not be taken t.i.d. or as a prophylactic in between attacks. For these reasons, each patient was given the following directions: 1. Take two tablets at first sign of attack. 2. If the attack continues take one additional tablet every half-hour until attack is terminated. 3. Do not take more than six tablets for any single attack or more than 10 tablets in any one week. 4. If attack develops more rapidly or is more severe than usual, take three or four tablets as early as possible. 5. If you notice any change in your symptoms, report to your physician immediately.

Twenty-eight patients (85 per cent) received relief from their headaches with this medication. If taken in adequate dosage and early in the attack, most patients can abort their headaches completely or markedly reduce the intensity of the headaches. Many of these patients complained of such additional symptoms as dizziness, extreme nervousness and nausea. It was our impression that there was an underlying tension element in most of these headaches. We felt that a sedative such as phenobarbital, together with a vagal or antispasmodic inhibitor, could best alleviate these symptoms and the tension element. We relieved the nausea, dizziness, and nervousness with a combination of 1/260 gr. of levorotatory belladonna alkaloids and 3/4 gr. of phenobarbital per tablet. Kramer and Ingelfinger<sup>4</sup> found that these particular levorotatory alkaloids of belladonna (Bellafoline) were an excellent antispasmodic. Other investigators<sup>5, 6, 7</sup> have obtained a reduction of the nausea and vomiting together with control of the headache by using the combination of Bellafoline and Cafergot.

### Summary

This study indicates that patients complaining of headaches not controlled with ordinary analgesics can be greatly aided by the use of an ergotamine tartrate and caffeine combination, available as Cafergot. Eighty-five per cent of the patients could abort their attacks when they took this medication at the prescribed time. Also, further benefit can be derived by the patients complaining of dizziness, nausea and nervousness by the addition of one tablet of an antispasmodic plus phenobarbital (Bellafoline). Our findings confirm the work of other investigators<sup>1, 2, 3, 5, 6, 7, 8, 9</sup> who have found Cafergot to be effective for the relief of the so-called vascular headache. We, however, referred to these vascular headaches as those unresponsive to analgesics. It is our opinion that further investigation may show that there are other factors in addition to the vascular components involved in this type of headache which is unresponsive to analgesics.

### Conclusions

1. Relief in 85 per cent of headaches without unusual clinical findings, and unresponsive to analgesics, was obtained with Cafergot.
2. Patients should be instructed to take medication at first signs of attack.
3. Complete history and physical examinations are essential.
4. Sedative plus antispasmodic in addition to Cafergot aids in relieving tension and other symptoms of a parasympathetic nature.
5. Further investigation may reveal other factors besides the vascular components involved in these headaches resistant to analgesics.

### Acknowledgement

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## Office Gynecology\*

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When I selected the subject, "Office Gynecology," to present to you, I did so after considerable elimination of many other attractive topics. A paper on hysterectomy or vaginal plastic surgery, to mention but two, might have furnished some very boring statistics and, possibly, a note or two on operative technique or even post-operative care which could be interesting; but either of these subjects would not be of major concern to most of us nor to the vast majority of our gynecologic patients. Let us not forget that it is only the occasional patient who requires gynecologic surgery when we consider the large number of women who consult us in our offices because of gynecologic complaints. I hope that I do not become too literal at this point. That is always a danger! But I do hope to bring out some aspects of gynecologic practice which are always with us and which, at least in my own practice, are not infrequently troublesome.

Several years ago I had my nurse list the six most common complaints among women coming to the gynecologic section of the clinic of which I am a member. This was a woman's list, prepared by a woman who dealt with other women daily in a private gynecologic practice. The complaints were listed in the order of frequency and include: 1. headache and fatigue; 2. backache; 3. dysmenorrhea; 4. bleeding; 5. symptoms of prolapse, and 6. pruritus, with or without leukorrhea. I have found no particular reason to change the list. There may be some seasonal variation in it, but, essentially, it has not changed.

The first thing such a list suggests is confusion! That is correct unless one begins, in an orderly manner, to take a careful history of the patient. It seems to me that the only way to get an intelligent history is to let the patient tell her story. After she has stated her complaints is time enough for me to start asking specific questions. Maybe much of what she says is irrelevant to you, but not to her, and if you listen carefully enough you may get a lead that will put you on the right track far sooner than if you attempted to direct the questioning *and* the answers. It pays to be a good listener!

After the patient has told me all of her complaints, I find it a good idea to ask some questions on some specific subjects. The first of these concerns menstruation. I want to know the age at on-

set, the cycle, and the duration of the flow. One should set his own standards on what constitutes normalcy. This may vary with his type of practice and its location. I regard an onset between 12 and 14 years, a cycle of 21 to 35 days, and a duration of flow of from three to seven days as normal.

If dysmenorrhea is present, one wishes to know the time of its onset, in relation to the menstrual cycle, its duration, and whether or not bed rest is required. If inter-menstrual bleeding is present, this should always be noted, as should the time of its appearance and the amount of the bleeding. I do not regard the passage of clots during menstruation with too much concern unless they are described as of hen's egg size or larger.

When one is dealing with a patient in the menopause age group, one should note the age at which the menopause began and the date when the last uterine bleeding occurred, then go back, carefully, and search for two important events: 1. the appearance of "spotting" and 2. episodes of flooding. Most women will regard either of these events as "normal" in "the change of life." To me, they are abnormal at any time. In the menopause age group, especially, no physician has a right to dismiss them as of no consequence until he has made certain as to their etiology.

If the gynecologic patient has been pregnant or has borne children, her obstetric history should be noted. It should include the number of children she has had, the number of abortions, and at least a record of any major obstetric complications such as the triad of infection, toxemia or hemorrhage. As one's interest in gynecologic pathology grows, he will find himself paying more and more attention to an antecedent history of dystocia or other obstetric pathology! Some of us have been fortunate enough to have heard Doctor Calkins' talk on the subject, "I haven't been well since Mary was born." I recommend it as "must" reading if one would obtain a concise picture of how obstetrics may effect gynecologic practice.

And, finally, in taking the history of the gynecologic patient, I want a listing of her previous illnesses, their sequelae, if any, and a careful recording of any previous operations she may have had.

When one begins to inquire into the habits of the gynecologic patient he should possess a high degree of diplomacy coupled with the persistence of the F.B.I. Take the matter of food, for example.

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You have all seen the fat girl or woman who "doesn't eat a thing" and her thin and undernourished counterpart who tells you the same thing, when both are actually over-eating, quantitatively if not qualitatively. And yet the first three of my list of common complaints, headache and fatigue, *bachache*, and dysmenorrhea, frequently occur in both types and, not infrequently, are aggravated by bad eating habits.

Bowel habits should be noted and especially the cathartic habit and, while you are on that subject, try to find out how many glasses of water per day your constipated patients are drinking.

Alcohol and tobacco, it seems to me, are assuming a more prominent place in the lives of American women; and coffee has assumed the prominence where every friendly neighborhood finds the women gathered for the morning coffee hour, not forgetting the afternoon bridge or informal get-together. Nor has American business or professional life escaped this social outlet. This is all to the good in its larger sense, for it helps to relieve the tension and the "jitters" under which all of us work at times. The point is, however, that in certain gynecologic patients we may have to curtail the intake if we are going to relieve some functional gynecologic complaints just as the internist has to do in the case of the male executive who has such an organic and fashionable disease as a peptic ulcer.

As for the less evident but rapidly increasing use of alcohol, I would suggest that you pay more attention to the drinking habits of your gynecologic patients. Except in the out-and-out dipsomaniac, this is difficult and delicate; but it is very important. Too often I find the "social" drinker using alcohol as an anodyne.

I have far too many one and two package a day cigarette smokers among my gynecologic patients. They smoke because they are nervous or they are nervous because they smoke, I don't know which. But I do know that, when I am able to reduce their smoking to more reasonable limits, many of their subjective symptoms, chiefly headache, fatigue, and anorexia are often greatly relieved.

I hope that I sound like a temperance lecturer—not a prohibitionist! St. Paul put it much better when he said, "Let your moderation be known to all men." And I would add, for the sake of our gynecologic patients, "to all women."

Two complaints in the sex life of the gynecologic patient occur with enough frequency to warrant specific mention: frigidity and dyspareunia. Without any Freudian technique, it is not too difficult to elicit a history of the former, but a history of dyspareunia, except in comparatively rare instances is, in my experience, more difficult for the patient

to relate. And it is more important! Frigidity usually indicates male ineptitude, more rarely some endocrine imbalance; dyspareunia is often a valuable symptom in organic pelvic disease.

I have, by no means, exhausted the subject of history taking in the gynecologic patient, but I hope that I have indicated its importance.

The gynecologic examination pre-supposes a general physical examination. Such a supposition may be erroneous for I have seen menorrhagia and metrorrhagia successfully treated only after a general surgeon had discovered and operated upon a toxic adenoma of the thyroid, and I can recall several cases of amenorrhea which were corrected only after myxedema with severe hypothyroidism was recognized, clinically.

Several points need emphasis if one is to obtain the greatest possible information from the gynecologic examination. First, and of the greatest importance, is to have the patient's bladder and rectum empty. The catheter is the surest way to guarantee an empty bladder and an enema is frequently necessary to empty the rectum and rectosigmoid. Failure to insist upon these things may lead to inaccurate and embarrassing results. I can recall numerous instances where distended bladders have been erroneously diagnosed as ovarian cysts, and other cases where fecal impactions in the pelvic colon have led referring physicians to diagnose solid pelvic tumors where none existed. One can make plenty of mistakes in a gynecologic examination, even under favorable conditions, without handicapping himself by neglecting the proper preparation of bladder and rectum!

The patient should be placed on the examining table in the lithotomy position, buttocks well down to the edge of the table and the legs comfortably supported with knee crutches. Some prefer foot stirrups. That is optional, but I believe that I get better exposure and a more comfortable patient by using the knee crutches. Suitable draping with one sheet by the office nurse does much for the patient's morale and modesty and should be insisted upon.

Careful inspection is given the external genitalia, the physician wearing a comfortably fitting and adequate head light which leaves both gloved hands available for palpation for any abnormalities and for determining the status of the vaginal introitus. Then one proceeds with the bimanual examination, followed by the rectovaginal examination. The latter is most valuable and should not be omitted. It is of inestimable value in the localizing of endometriosis in the posterior cul-de-sac and rectovaginal septum and in the more accurate localization of pelvic tumors, particularly those involving the adnexae and the posterior wall of the uterus. And

in trying to determine the extent of pelvic malignancies or inflammatory disease the rectovaginal examination is of the greatest value.

It should not be necessary to emphasize the importance of visualizing the cervix uteri and vagina in a gynecologic examination but, unfortunately, such emphasis is necessary! During the time this talk was being prepared, I can recall a case of bleeding cervical polyp, erroneously treated by the referring physician as a case of threatened abortion, one prolapsed and pedunculated uterine myoma, referred for uterine bleeding of undetermined origin, and a third patient with a very extensive cervical erosion who had been treated with douches for three months by her physician without having had her cervix visualized. All of these and many more would have had adequate treatment much earlier if the first examining physician had only looked at the cervix.

This is not a treatise on genital tract malignancies. That is a subject which demands separate consideration and which, in importance, cannot be over-emphasized. But let me state that if in the practice of office gynecology we would familiarize ourselves with the appearance of the normal and the abnormal cervix we would take a long step toward the earlier recognition of the second most common malignancy in the female, carcinoma of the cervix.

With the vaginal speculum in place, the time has come for the taking of vaginal spreads for the laboratory diagnosis of leukorrheal discharges and a hanging drop for the detection of trichomonads.

If the history of the patient is suggestive of prolapse, cystocele and/or rectocele and the findings on gynecologic examination in the lithotomy position are equivocal, the practice of examining the patient in the erect position with one foot elevated on a stool is most valuable. Having the patient strain while in the erect position will frequently establish the diagnosis where, formerly, it was in doubt.

In the office practice of gynecology, I find the following laboratory examinations used most commonly: 1. catheterized urinalysis; 2. the determination of hemoglobin, erythrocyte and leucocyte counts and the sedimentation rate; 3. the Wassermann reaction, the Rh factor and the blood group; 4. the examination of vaginal and cervical spreads with the gram stain, and the hanging drop examination of vaginal secretions; and 5. the determination of the basal metabolic rate and the blood cholesterol.

In the foregoing, the emphasis has all been placed upon the importance of the history, gynecologic and laboratory examinations of the patient in the office practice of gynecology. All of the procedures mentioned can be done in the office and laboratory of

the physician. Now I would like to refer to my list of the most common gynecologic complaints and suggest treatment which, like the history, gynecologic and laboratory examinations mentioned, can be applied in the office and supervised from there.

1. Headache and fatigue. If the headache is of the migraine type and one has not been able to determine any specific allergy, my best results have been obtained with the oral administration of ergotamine tartrate. When the headache is of premenstrual origin and there is no menstrual abnormality, 0.5 mgs. of stilbestrol nightly for one week before the menstrual period is due, coupled with phenobarbital in 16 milligram doses two or three times daily for the same length of time, is often efficacious.

When, as is so often the case, the headache is associated with hypothyroidism and a secondary anemia, thyroid extract in small doses, to begin with, and the administration of ferrous carbonate or ferrous sulphate are usually effective. It goes without saying that, in our strenuous modern lives, headache and fatigue are often expressions of nervous exhaustion, as in the case of the mother with small children and the excessive demands that children and home make upon her; or as occupation hazards in the case of nurses, schoolteachers, and telephone operators. In all of these cases, the most effective therapy might be a vacation or a change of scene.

In a group of high school and university students, roughly from 13 to 19 years of age, headache and fatigue follow a little different pattern. They awaken tired, gulp a hasty breakfast, lunch on soft drinks and, occasionally, eat one fairly good meal a day. Their headaches are not particularly acute nor are they usually related to menstruation. They occur in mid-morning and mid-afternoon. After one has satisfied himself that no organic disease is present, these patients usually respond to an adequate diet, proper rest, using mild sedation for short periods if needed, hematinic therapy, with or without vitamin therapy.

When headache and fatigue are the chief complaints in the pre-menopause or menopause patient, one should pay particular attention to the possibility of hypertensive cardiovascular disease. If, after careful gynecologic investigation and the necessary laboratory studies, we conclude that the headaches and fatigue may be on an estrin deficiency basis which, in reality, may be an anterior pituitary deficiency, I start parenteral estrogenic therapy and mild oral sedation and note the response. This is one of the reasons I emphasize parenteral estrogenic therapy. One must observe



the patient frequently. Another reason is that the patient appreciates my personal interest in her problem and, finally, if my treatment produces abnormal bleeding, I, at least, want to be the first doctor to know about it!

2. Backache. This is not often of gynecologic origin. It is much more commonly due to postural defects, fallen arches, sacro-iliac strain, spinal arthritis and slipped disc. In my experience it is more of an orthopedic than a gynecologic problem. Nevertheless, it may be a symptom in a small number of patients with retroversion and/or retroflexion of the uterus, pelvic endometriosis and cervical lacerations and erosions.

When retroversion and/or retroflexion is etiologic in backache it will usually be found that low back pain begins one week before the onset of menstruation, becomes progressively worse as the time for menstruation approaches, is then augmented by pre-menstrual cramping and is usually relieved when the flow is established. The therapeutic test of a retroversion pessary of the Hodge or Smith-Hodge type will usually settle the question.

Backache, when related to pelvic endometriosis, is worse at the time of menstruation. When one is able to palpate the shotty, tender nodules in the rectovaginal septum and especially if the utero-sacral ligaments are involved, he will find that a retroversion pessary inserted for the correction of the commonly associated retroversion aggravates the backache. At present there is considerable argument over the surgical versus the non-surgical treatment of endometriosis. We have not been impressed by the results from radiation therapy, male sex hormone nor the luteinizing hormone in the relief of this condition, and now, as palliative treatment, use codeine, with or without salicylates, for temporary relief.

The cervix, when the cause of backache, will usually be found to be lacerated and with varying degrees of erosion and/or cervicitis present. If the sedimentation rate of the patient is not above 20 millimeters in one hour and the erosion or cervicitis is thought to be etiologic, the cervix should be cauterized with the nasal tip cautery, followed by triple sulfa cream into the vagina, and the patient should be instructed to stay off her feet as much as possible for the week following cauterization and, under no circumstances, is she to take a douche. Intercourse is interdicted for at least four weeks or certainly until the discharge ceases, and the patient is asked to return for re-examination in from four to six weeks.

3. Dysmenorrhea. Let us not forget that this symptom may appear at any time during the reproductive life span of the patient. The term "con-

genital" dysmenorrhea is not accurate for most patients with this complaint get along with a minimum amount of discomfort for a few months to several years after the establishment of menarche. In my opinion, it is definitely on the increase, and I attribute this to the quickened pace, the emotional instability, and the confusion under which all of us live. There may be a competitive element present to aggravate it, school, the first job, the matter of "dates." Whatever it may be, the usual gynecologic finding is a normal pelvis.

It has seemed to me that ante-version and ante-flexion are more frequent in patients with this complaint than is retroversion. The patient with congenital dysmenorrhea, presenting the ante-verted or ante-flexed uterus and a long, tapering cervix, set well back in the vagina, was a frequent candidate for curettage and the insertion of a stem pessary. In the early years of my gynecologic practice I am sure that I removed a dozen or more stem pessaries per year from patients who had them inserted for the relief of dysmenorrhea or as a contraceptive. It has now been over a year since I had to remove one. Fortunately the use of this device is rapidly subsiding.

Some will still argue that dilatation and curettage are of value in the treatment of congenital dysmenorrhea. I doubt if the relief obtained is of enough value to warrant the procedure. It is obvious that patients with this complaint should have thorough physical examinations, that the condition of the blood must be known and that a basal metabolic rate and blood cholesterol determination and a chest x-ray are frequently desirable. But in patients whose findings are all within normal limits, the greatest relief, in my experience, is obtained with the administration of small doses of phenobarbital, given from once to three times a day for one week before the menstrual period is due. For the patient with pain, severe enough to require bed rest, my long-standing favorite is a capsule containing codeine sulphate, 16 milligrams, atrophine, 0.3 milligrams, and acetyl salicylate acid, 325 milligrams.

Hormone therapy has not given me any striking results. In certain cases, even with basal metabolic readings within the so-called normal limits of 0 to plus 10, small doses of thyroid extract seem to have a beneficial effect.

Acquired dysmenorrhea, as would be expected, is more easily classified. I would list four classifications as to etiology.

1. Salpingitis, usually of gonorrheal origin.
2. Pelvic inflammatory disease secondary to post-abortion or puerperal infection.

3. Birth trauma or trauma from ill-advised or inadequate gynecologic surgery.

4. Retroversion of the uterus, particularly when associated with marked relaxation of the supporting pelvic structures.

Whatever the cause, the majority of patients afflicted with acquired dysmenorrhea are non-surgical. Antibiotics, sulfon therapy, short-wave diathermy, local treatment to the cervix and the retroversion pessary in proper cases all have their place.

The office treatment of vaginal bleeding must be directed, first of all, to finding the source of the bleeding. This has been mentioned several times earlier in this talk. Our main objective, I repeat, must be to determine the source of the bleeding. If it is from a cervical polyp, the excision of that polyp, the sending of it to the pathologist, and the cauterizing of the base of the polyp may be all that is necessary. Punch biopsies from suspicious lesions on the cervix may be done as office procedures under surface anesthesia. The important thing here is to be certain that one obtains adequate, representative sections. Curettage should remain a hospital procedure.

It is not possible to discuss the treatment of the menopause at this time; but one aspect of it only must be emphasized. Irregular uterine bleeding at any time in the life of the individual is abnormal! That statement needs all the emphasis I can give it. Our patients need to be told that, over and over again! And I believe that physicians need to remind themselves of that fact, not infrequently. It is tragic to find a far advanced carcinoma of the cervix or one of the body of the uterus and then to have the patient tell you, "But, Doctor, I thought it was just due to my 'change of life!'" At the menopause, one should be doubly careful to know, beyond doubt, that no malignancy is present before he starts treatment for any associated symptoms, and this goes not only for estrogenic therapy, but for any palliative treatment.

Again, in connection with uterine bleeding, there is one great service which I can render my patients in office gynecology. That is when I get a patient with severe vasomotor symptoms which she attributes to the menopause, and who has been on estrogenic therapy of one kind or another for some time. I can stop the hormone therapy! I can carefully examine her pelvis, I can palpate and visualize her cervix, I can carefully examine her breasts and, if there is no demonstrable pathology, I can have her return for re-examination in one week, having stopped all medication in the meantime, and then re-check her history and my findings. The indiscriminate use of estrogenic therapy is one of

the greatest causes of irregular uterine bleeding, at or near the menopause, that I know. I have no evidence that it initiates carcinoma; I do know that it can mask it.

Symptoms of prolapse are so variable! One woman with only a small to moderate cystocele will complain greatly of urinary frequency and stress incontinence. Another, more phlegmatic, may have a large cystocele, rectocele and uterine prolapse and complain very little. The correction of prolapse is surgical. The palliative treatment of it is often gratefully received by the patient, especially if for one reason or another her condition is not thought satisfactory for surgery. A doughnut pessary or a Gellhorn pessary may be useful. If placed, one must caution his patient to return at frequent periods so that one can check the results and, what is more important, cleanse the pessary and note whether or not it is producing irritation. I recall one dear old lady with a complete procidentia who proudly announced that she had fooled me by wearing her pessary for two years with complete relief of her symptoms. She returned because her daughter objected to the disagreeable odor! I finally was able to "dig" the pessary out of the vagina and, after about two months, had the vaginitis and vaginal ulcerations healed so that I could do a vaginal hysterectomy and vaginal plastic operation.

The medicated vaginal tampon still has a place in office gynecology in the temporary treatment of certain complications of prolapse. Ulcerations on vagina and cervix may be healed rather promptly by boroglycerin or ichthyol-glycerin tampons, placed one day by the physician and removed the following night by the patient.

And now I have come to Number 6 on my nurse's list of common gynecologic complaints: pruritus, with or without leukorrhea.

The first thing I want to know about pruritus, usually pruritus vulvae, is whether it is on a generalized, organic basis or whether it is on a local basis. This sometimes requires considerable study. To mention two extremes, diabetes mellitus and pediculosis pubis can both produce pruritus vulvae; so can leukoplakia and kraurosis vulvae; so can myxedema; so can douches and various allergens. It seems best, for the sake of brevity, to limit this discussion to those cases commonly associated with leukorrhea. Under the term, "leukorrhea," let us define it as any abnormal, blood-free discharge from the female genital tract. The causes of leukorrhea are as numerous as the sands of the sea! We won't go into them because there are other speakers on this program and, besides, I don't know all of the answers.

It seemed to me that I would do well if I lim-



ited my remarks to two common conditions in which pruritus vulvae and leukorrhea are common symptoms and tell you what little I know about how to relieve them.

The first is monilia vaginitis. It is most common in pregnant women and in patients with diabetes mellitus. Unless one finds the telltale white plaques in the vagina which, when removed with a swab, leave a raw or even a bleeding surface, and notes the superficial ulcerations which are so commonly found on the inner surfaces of the labia, he is likely to miss the diagnosis unless he either cultures the vaginal secretion in warm normal saline solution for 24 hours or, better yet, places a swab of the vaginal secretion in a test tube containing 10 per cent potassium hydroxide solution and then looks for yeast spores under the microscope. Even then, they may be missed if few in number.

At this point the therapeutic test is often of great value. Apply a two per cent aqueous solution of gentian violet thoroughly to the cervix, vagina, vaginal fornices, perineum, labia and about the clitoris and let it dry before your patient gets off the table. Instruct her that what you have applied is messy and indelible and protect her clothing with a vulvar pad. Have her return in three days. If she suffered from a monilia infection, she will be greatly relieved; if she had a leukorrhea from a mixed vaginal infection she will be improved. I am still looking for that chemical incongruity, a colorless gentian violet! Until I find it, I will continue to pin my faith in the treatment of monilia vaginitis on the two per cent aqueous solution of gentian violet, applied by me in the office with sufficient frequency to eradicate the yeast.

*Trichomonas vaginalis* vaginitis is the bane of my gynecologic life. I know of no so-called minor gynecologic complaint that is so ubiquitous and so tenacious. It affects all females, from menarche to menopause—and sometimes beyond—and it has been known to take up its abode in the prostate. I know little of its life history, but I think I have learned some of its characteristics. It produces, usually, a light green or yellow foul smelling and abundant discharge. It frequently makes its victim think she has gonorrhea. It is readily recognized in a hanging drop under the low power stage of the microscope. It produces an intense vaginitis and, in acute or severe infections, often small, punctate hemorrhages in the vaginal mucosa. On the initial examination of a well established case, the vagina is often so irritated that the patient cannot tolerate even a small, well lubricated speculum. In my ex-

perience it seems to be more prevalent in the fall or in late winter or early spring. One March day this year, my first three pre-partum patients were all suffering from it, in various stages of their pregnancies. Flare-ups are especially likely, after one thinks he has the infection eradicated, during and just after a menstrual period.

When one finds as many remedies listed as are recommended for the treatment of *trichomonas vaginalis* vaginitis, he knows that no specific cure has been found. From a clinical experience of many years, I have made only four observations which seem to stand up under the test of time.

First: Regardless of the treatment employed, results are not likely to be satisfactory unless one at least restores the acidity of the vagina to a high level.

Second: The period during and just after the menstrual period is the time when the infection is most likely to flare up.

Third: The prostate may harbor the organism and be the source of reinfection.

Fourth: One must keep his patient under close and frequent observation for, sometimes, several months to insure the best results.

My plan of treatment is as follows: Cleanse the vagina with green soap and warm water and dry with cotton applicators. Under direct vision, place one floraquin tablet in the anterior and one in the posterior cul-de-sac. Give the patient a prescription for 36 such tablets and instruct her to insert one tablet into the vagina, as far as she can reach, each morning and every night at bedtime. Every second night, before she inserts the bedtime tablet, she is to take a douche consisting of one-half cupful of vinegar in a quart of warm, boiled water. This treatment is to be continued *throughout the menstrual period!* She is to return when her supply of tablets is exhausted, at which time a careful speculum examination is again made and another hanging drop taken for trichomonads.

#### Summary

And so I have exhausted you and my list of common gynecologic complaints. I have, by no means, attempted to cover all of the conditions we must treat in the practice of office gynecology. But let us remember that from 80 to 90 per cent of the gynecologic patients we see are non-surgical; and that, if by careful study and persistent treatment, we can bring relief to a large percentage of that group our efforts will have been very much worthwhile.

# Temporal Arteritis: Report of a Case with ACTH Therapy

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Newton, Kansas

## Preface

In presenting this paper, "Temporal Arteritis and Report of a Case With ACTH Therapy," the authors wish to express acknowledgment of the cooperation of J. A. Grove, M.D., Harold Morgan, M.D., and Theodore Sills, M.D., all of Newton, Kansas. We are of the opinion this single case merits presentation for several reasons. First, after a very careful review of the literature, we found that only approximately 85 cases of temporal arteritis have been reported. Second, as temporal arteritis is a disease of the senile and as the expectancy of life is greater now than heretofore, more cases will be seen. Third, previous methods of therapy have been only partially successful to date. Treatment with Adrenocorticotrophic hormone (ACTH) was so dramatic, in our opinion, in this single case that further study is indicated. As far as we are able to ascertain, after very careful review of available literature, ACTH has not been used heretofore.

## Introduction

Temporal arteritis or cranial arteritis is a definite clinical disease entity which was first described by Jonathan Hutchinson in 1890 in England;<sup>1</sup> Schmidt<sup>2</sup> of Copenhagen in 1930 also reported a case of temporal arteritis. The American medical writers apparently overlooked these two previous publications and in 1932 Horton, Magath and Brown<sup>3, 4</sup> described temporal arteritis as a previously unreported disease entity. Since 1890 approximately 85 cases have been reported in the literature. H. J. Profant<sup>6</sup> in 1944 reported two cases and after a review of the literature found that 17 cases had been reported. Kenneth Robertson<sup>23</sup> in 1947 reported four additional cases. Protas and Saidman<sup>7</sup> in 1948 reported a case of temporal arteritis with pernicious anemia and found that 52 cases had been reported. Jennings<sup>8</sup> in 1948 reported four additional cases. A review of the literature and report of five additional cases was given by Crosby and Wadsworth<sup>19</sup> in 1948. Kaye<sup>9</sup> in 1949 reported seven more cases. Writers such as Bruce,<sup>2</sup> Johnson, Horley and Horton<sup>5</sup> and Schick, Baggenstoss and Polley<sup>17</sup> have also described temporal arteritis.

## Anatomy

Formerly it was thought that temporal arteritis was a pathological process involving only the temporal vessels; however, most writers now feel it is much more wide-spread, since the process has been

found at autopsy to have involved the retinal, subclavian, renal, carotid, coronary, femoral, occipital, brachial and cerebral arteries.

Clinically, the red, swollen, nodular, painful temporal arteries are the diagnostic point, hence a brief review of their anatomy will be given. The superficial temporal artery is the smaller of two terminal divisions of the external carotid artery. It arises opposite the neck of the mandible and under cover of the parotid gland, passes upward in the interval between the condyle and the external acoustic meatus to the zygoma, lying on the capsule of the tempor-mandibular joint. Then it ascends over the posterior zygomatic root and the temporal aponeurosis for about four or five cm. and there divides into the frontal and parietal branches. It gives off the following branches: 1. parotid, 2. transverse facial, 3. anterior auricular, 4. zygomatico-orbital, 5. the middle temporal, 6. the frontal, and 7. the parietal.<sup>13</sup>

## Etiology

The cause of temporal arteritis is unknown. Several theories have been advanced. First, there are those who feel that the disease bears a direct relationship to similar conditions such as thromboangiitis obliterans, poly-arteritis nodosa and scleroderma. Second, there are those who feel that temporal arteritis is part of an infectious process. Supporting this theory is the fact that most, if not all, cases run a febrile course and most have the local and systemic symptoms of an infectious process. In reporting this case, the authors do wish to call attention to the fact that the patient to be reported had a severe follicular tonsillitis just prior to the onset of temporal arteritis. Third, there are those clinicians who feel that the disease is just a part of a generalized arteriosclerosis. Supporting this theory is the fact that it occurs at about an average of 65 years, the age at which arteriosclerosis is seen. To date, as far as we know, the disease has not been reported except in the white race. The females outnumber the males three to one. Meyers and Lord<sup>10</sup> in 1948 reported a case in a patient 22 years of age.

## Pathology

The pathological picture as noted by most writers is fairly constant. The terms temporal arteritis or cranial arteritis are not complete, as the same pathological process has been noted in other arteries. The temporal arteries, when examined microscopically, are hard and thick and nodular, with a fine capillary

\*Axtell Clinic, Newton, Kansas.



lumen throughout. The veins accompanying them have usually been normal. According to Chasnoff and Vorzimer,<sup>11</sup> Bowers<sup>12</sup> and Jennings<sup>8</sup> the microscopic picture is that of a periarteritis and arteritis. The media shows the greatest changes, with replacement of the muscle by collagen, necrosis and hemorrhage. The media may be destroyed and replaced by granulation tissue containing multinuclear giant cells. The intima is somewhat thickened. Changes in the adventitia, such as fibrosis and focal infection with lymphocytes and plasma cells, are noted.

#### Symptoms

The main diagnostic features of temporal arteritis are three. 1. Severe headaches which are usually seen at the average age of 65 and which occur in the ratio of females to males three to one. This pain is severe and usually only partially relieved by opiates. It occurs chiefly at night. 2. The duration of the complaint; only those cases which terminate fatally are less than three months and one case was reported as lasting as long as 20 months. 3. The marked systemic reactions such as general malaise, anorexia, loss of weight, low grade fever, mental confusion and despondency, vomiting and marked weakness. Local symptoms usually seen which are diagnostic are painful, red, nodular, swollen temporal arteries, which may be unilateral or bilateral. There may also be submental and cervical adenopathy, puffiness of the face and eyes, and painful mandibular joints. Laboratory examination may reveal a moderate to severe anemia, increased sedimentation rate and moderate leucocytosis. Bruce<sup>2</sup> reviewed all the cases of cranial or temporal arteritis of 84 known cases and found that 34 of these had symptoms referable to the eyes. He estimated that in 40 per cent of the cases the eyes may be expected to become involved and, further, that more than half of those patients whose eyes become involved can be expected to lose their sight permanently in one or both eyes.

#### Treatment

To date, various procedures and medications such as salicylates, potassium iodide, vitamins, opiates, oxygen, penicillin, sulfa preparations, aureomycin, acetylsalicylic acid and the like have been used for patients without results. Some clinicians found that a biopsy of the involved vessels was sufficient to obtain a high degree of relief from the severe pain; however, the disease ran a definite course. Roberts and Askey in 1948<sup>16</sup> treated four patients by procaine hydrochloride block of the pariaarterial sensory pain fibers coursing along these vessels. In three the pain was promptly and completely relieved; in the fourth, intracaine block of the stellate ganglion also was required. Schick, Baggenstoss and Polley<sup>17, 18</sup> in March of 1950 reported two cases of

cranial arteritis who were promptly relieved when given Cortisone. The local and systemic symptoms were promptly relieved; however, on the follow-up biopsy, characteristics of chronic arteritis were found and apparently little more healing had taken place than would be expected in the natural course of the disease. Visual complications had not developed in either case when reported.

#### Prognosis

Most of the cases diagnosed as temporal arteritis or cranial arteritis have, according to the literature, recovered in a month to 20 months. Some cases have ended fatally. Many cases no doubt have not been recognized and the patients have died without recognition of the disease. It is impossible to estimate the mortality rate due to this factor. Many cases have died from other causes such as pneumonia, cerebral accidents, hemorrhage and cardiac disease after the marked systemic reaction of temporal arteritis. About 40 per cent of the reported cases according to Bruce<sup>2</sup> had associated eye symptoms and about half of these have been left blind in one or both eyes.

#### Case Report

The case to be reported is that of a white female, age 79, who was in good health until August 27, 1950, at which time she had a severe acute follicular tonsillitis. Under adequate doses of penicillin she recovered from this. On September 1, 1950, she began to have severe pain in the head, especially in the right and left temporal regions. This pain was cramp-like at times and much worse at night, when she was unable to lie down to sleep. The patient felt that even a hair net aggravated her condition. She began to run a low grade afternoon and evening fever, from 99 to 100.4 degrees. She became anemic and pale, lost her appetite and as a result began to lose weight.

The past history of this patient revealed that she had had the usual childhood diseases. She had had one child, male, now 41, living and well, and one child was dead at birth when the patient was 34 years of age. Surgical repair of cystocele and rectocele was accomplished in 1944. She suffered a fractured pelvis as the result of a fall in 1948, and had atypical virus pneumonia in July 1949 and December 1949. For her age the patient has been unusually active and well. She is a widow, her husband having died in 1947 at the age of 80 of an aplastic anemia.

Physical examination revealed a white female, age 79, cooperating readily and well. Her weight was 124 pounds. She was holding her hands to her head due to the severe head pain. Her mental state was excellent. The temperature was 100 degrees. Her eyes reacted to light and accommodated distance. The pupils were equal and regular; ophthal-

moscopic examination revealed no marked pathology. The remaining teeth were normal; tonsils were present, red and hypertrophic. The mucous membranes were pale; tongue was normal. The heart and lungs were normal; blood pressure was systolic 160, diastolic 90; pulse 80 and regular. The abdomen and genitalia were normal. Her skin was normal. The reflexes were normal except for decreased knee jerks. Some arthritic changes were noted in the hands, feet and knees.

#### Laboratory

The following laboratory procedures were performed with these results: hemoglobin 48 per cent, 6.95 grams; red cell count 2,330,000; white cell count 8,400; segmented cells 72 per cent, lymphocytes 27 per cent, monocytes 1 per cent. The non-protein nitrogen was 13.7 grams. Lumbar puncture revealed normal pressure, normal gold curve and cell count of three. Blood Wassermann and Kline tests were normal. Urinalysis revealed the following: clear, straw, acid reaction, specific gravity of 1.020, trace of albumin. Microscopic examination showed three plus pus cells and a few red blood cells. The icteric index was 5.7 units. The platelet count was 210,000. Bleeding time was five minutes; coagulation time  $4\frac{1}{2}$  minutes; prothrombin time 81 per cent of normal. The sedimentation rate was 38 mm. Westergren method. An anterior-posterior and lateral radiograph of the skull revealed no pathology. An electrocardiogram was normal. No biopsy specimen was taken due to her advanced years and obvious clinical diagnosis.

#### Course

This patient was in the hospital from September 21, 1950, to October 19, 1950. During this time she ran an afternoon temperature every day from 99 to 100.4 degrees. The pain was controlled somewhat with 100 mgs. of demerol and codeine grs.  $\frac{1}{2}$ . She was given 500 cc. of blood on September 27, at which time she had a reaction with chill and temperature elevation to 101.6 degrees. Various medications were used: oxygen, caffeine soda benzoate, vitamin B12 (30 micrograms daily), B complex and ascorbic acid by injections, saturated solution of potassium iodide, aureomycin capsules, 250 mg. for a total of 16, salicylates, penicillin in adequate dosage, liver and iron capsules.

At the end of four weeks her blood count revealed hemoglobin 71 per cent, 10.20 grams; red cell count 3,900,000; white cell count 8,400; differential, segmented cells 72 per cent, lymphocytes 28 per cent. The patient felt better, the pain was less but still present and she was allowed to go to her home.

She was at home under nursing care and with the

above medications; however, by November 11 she was as she had been September 21. Her blood count was hemoglobin 48 per cent, 6.95 grams, red cell count 2,480,000; white cell count 13,900; differential, segmented cells 75 per cent, lymphocytes 24 per cent and monocytes one per cent. Since the onset, September 1, 1950, she had run an afternoon temperature of 99 to 100.4 degrees. The pain was severe; she was extremely pale and her face was puffy. During this time at various intervals she had complained of pain in the head, double vision and decreased vision, pain in the mandibular joint, nausea and vomiting, and loss of appetite. At times she had marked swelling of the submental glands. Also at times she was mentally confused and despondent.

She was readmitted to the hospital on November 11. At this time she was given her first dose of ACTH, one cc. or 10 mg. every six hours. The relief and response was dramatic, and has continued so until the present time (February 14, 1951). She was given 10 mg. every six hours until November 17, when it was decreased to 10 mg. every eight hours. The pain returned, and, for the first time, swollen hard nodular red swellings over both the left and right temporal arteries were noted. ACTH was again increased to the initial dosage with absolute relief. On November 27 the dosage of ACTH was again decreased to 10 mg. every eight hours with return of symptoms. It was again restored to the initial dosage of 10 mg. every six hours with complete relief. On November 30 the dosage of ACTH was decreased to 10 mg. every eight hours and the patient was carried on this very well until December 15, at which time it was decreased to  $7\frac{1}{2}$  mg. every eight hours. On December 19 the dosage of ACTH was decreased to five mg. every 12 hours and as the patient was still doing well except for a marked euphoria, it was discontinued entirely on December 25. The patient did fairly well until December 31, at which time she began to feel dizzy, was somewhat short of breath, had hard nodular swellings over the course of the temporal arteries, and had some swelling of lower extremities. The heart was somewhat irregular. The pain and swellings increased and on January 2, 1951, ACTH was again started, one cc. or 10 mg. every 12 hours, with marked relief of all symptoms. This dosage was continued with almost complete relief of symptoms until January 25, when it was decreased to 10 mg. ACTH once daily and discontinued entirely February 14.

From the time the initial dose of ACTH was given on November 11, 1950, to the present, February 14, 1951, the response to therapy was dramatic. No other medication was given except ascorbic acid, 100 mg. tablet three times daily and



Vi-Ferrin, Lederle, one capsule after meals. Also when her heart was irregular digitalis, 1½ grs., was given daily. While taking the ACTH she was given an enteric coated tablet of potassium chloride, containing five grs., three times daily and was kept on a low salt diet.

### Conclusion

Temporal arteritis or cranial arteritis, as suggested by Curtis<sup>20</sup> and others, is discussed. The terms temporal arteritis or cranial arteritis are misnomers but suffice until a better name can be offered, as involvement of arteries other than temporal or cranial has been described. A review of the literature from 1890, when it was first described by Jonathan Hutchinson,<sup>1</sup> to the present time is given. Approximately 85 cases have been reported. Most of the diagnosed cases have run an apparently self-limited course and many have recovered. The duration varies from one month to 20 months. Approximately 40 per cent of the cases have had some form of eye involvement and about 20 per cent are left partially or totally blind. The cause of temporal arteritis is not definitely known. Various methods of treatment have been used; however, procaine block of the nerves of the temporal vessels and biopsy severing of the vessels have proven most successful. To our knowledge, no cases have been reported using ACTH therapy; however, Cortisone has been used. A case report is given in which ACTH was used with dramatic and immediate response. The total dosage of ACTH was approximately 2,100 mgs.

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93rd Annual Session  
KANSAS MEDICAL SOCIETY  
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## PRESIDENT'S PAGE

Dear Doctor:

August 1 was the day that Blue Shield inaugurated a wider service for its members. These added services and benefits caused a very slight increase of monthly costs, so slight in fact, when compared to the increases in prices of other essentials, the amount becomes negligible. It seems to me that the schedule of non-surgical hospitalized cases, the increase of x-ray allowances, emergency treatments for minor bruises, burns, et cetera, further adjustments in behalf of the anesthesiologists and surgeons, together with added services for specialists in body cavity examinations, all add up to mean that step by step full coverage is being approached and we doctors should read carefully these provisions and avail ourselves daily of the opportunity to inform our patient public. This voluntary program is a right arm of strength in keeping at a distance the way of compulsion. The Blue Shield way is financially substantial, having in reserve as of June 1 nearly \$350,000. I want to say congratulations to the directing and operating personnel!

From the information at hand the doctors of Topeka and Shawnee County performed a great service without request or compulsion during the recent flood disaster. These acts should demonstrate to the public that the doctors still have a keen interest and concern in the health of their communities. The public that was concerned surely must feel grateful, and any who had been making statements alleging total selfishness would be embarrassed.

An outline in brief of the agenda for each committee is now in the possession of each respective chairman, and I trust this will be of some assistance to the committees in the months lying immediately ahead. I want to emphasize that these suggestions are intended only as an aid and by no means are to be construed as the final word of a fixed function in our program.

If the county secretaries have not yet completed the data concerning social welfare which was requested a few weeks ago by the central office, I would personally appreciate your immediate attention to the matter for it is important to other county components as well as your own! We are trying to improve for you the problem of caring for the unfortunate, and delay on your part is obstructing the effort and conclusion. We may not be successful, but for sure we are not going to provide further penalty on you in executing this program. This problem has assumed large proportions and it definitely is one not entirely the responsibility of Kansas medicine. This problem is basically a responsibility of the entire local community.

I was glad to note the Chamber of Commerce drew up a resolution on socialized medicine in which the indigent problem was given consideration. The hospitals and druggists must share with us the obligation of proper care for these people, and if this can be effected it is within the realm of possibilities that all of us participating will find it easier to carry the load with which we are charged; otherwise the problem is certain to become more complicated!

Always sincerely yours,

A handwritten signature in cursive script, reading "C. H. Benage". The signature is written in dark ink and is positioned at the bottom right of the page, below the typed name "C. H. Benage".



## EDITORIAL COMMENT

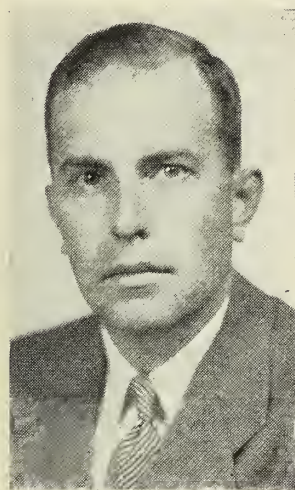
### There Was a Man

On July 1, 1948, Franklin D. Murphy, a vigorous young man, deserted the field as a private practitioner of clinical medicine to become the dean of the University of Kansas School of Medicine.

And as he did so, there were probably some misgivings in his heart and some indecision in his mind as to the wisdom of his choice.

It took a great deal of fortitude for one, only a few years out of medical school, and a fair share of those years devoted to the Medical Corps of the Army, to step into the chaos as dean of a medical school that was attempting to slow down from an accelerated training program, whose research program, always retarded because of lack of funds, was almost non-existent, and whose physical facilities were far from adequate.

His ability to make that decision, to step into a field heretofore unexplored by him, to assume the responsibility of a reconstruction and expansion program, to roll up his sleeves and go to work, requires the vision, fortitude, ambition and courage for which we all admire him.



Franklin D. Murphy, M.D.

told us, we were the most important part of the medical school. Then we students knew he was an all right guy."

In three short years the University of Kansas has made great advances in the total picture of medical education in this country. The research program has been developed and expanded greatly, the school's teaching facilities have been or are in the state of being expanded by more than 20 per cent. The post-graduate program of the medical school has been enlarged. The rural health program, embodying community responsibility, has been nurtured from a spindly seedling to a healthy producing plant.

It is not our intent to attempt to make our readers believe that this is totally due to the vision, the ideas, and the efforts of one man. But it is our in-

tent to point out that Dean Murphy, a neophyte physician in the midst of most of us, through long hours of sheer hard work, through perseverance, and through his ability as a co-ordinator of men, ideas, and activities has markedly elevated the stature of Kansas medicine and medical education.

A few weeks ago, Franklin Murphy was offered, and he accepted, the position as chancellor of the University of Kansas. You can be assured that this step was made only after prolonged and studied consideration. And you can be assured that there were many of the same misgivings that bothered him in 1948. But, had the legislature in 1951 seen fit to segregate the school of medicine from the university and placed it under its own governing body, Dr. Murphy would probably still be dean of the medical school.

In the panorama of human thinking, it is probably not possible for a man who has attracted his rightful share of the rays of the spotlight in local and national circles to avoid a certain amount of criticism in the minds and speech of superficially thinking individuals, should he embark upon a new or a different career. But, let us not be amongst those superficial thinkers. It is perfectly just that we express our sorrow that Dr. Murphy is leaving a position that we know he can most capably fill. But it is certainly not within the province of any man in Kansas, or elsewhere, be he lay or professional, to criticize a man for the choice of his vocation or the acceptance of a promotion, be it professional or financial or both.

And so, Chancellor Murphy, we wish you every success in your new position. We know that you cannot forget Kansas medicine, for the medical school is still a part of the university, but we will probably be a little jealous of some of the time and energy that you will spend with the many other departments of our university. And we know that when the next promotion comes along, you will again give it the same studied consideration and that you will make your decision with the same misgivings and the same regrets.

We also know that after that decision is made, and when your name is mentioned, we can truthfully say, "There was a man."

### Resolution on Socialized Medicine

The Council on Social Security of the Kansas State Chamber of Commerce met in Topeka on July 9 to map the course of the state chamber with reference to the above subject during the next two years. Some 29 business and professional people

from all over Kansas attended this all-day meeting where numerous resolutions were drawn covering all phases of social security.

The following represents the stand the state chamber will take during the next two years regarding health and socialized medicine. It was passed, one paragraph at a time, without a dissenting voice.

The Kansas State Chamber of Commerce believes that the physical health of a nation is the cornerstone of its economic health. Accordingly, the past efforts of the organization in encouraging and supporting health activities of benefit to the people of Kansas, and of the nation as a whole, will be vigorously continued. We urge that other voluntary groups continue and expand all activities holding reasonable promise of further improving the health of the citizens of Kansas and the United States. We do not subscribe to the declaration that there is presently a crisis in the health field. Past efforts toward improving the nation's health, as reflected in mortality statistics and by other evidence, have been amazingly successful. There is every reason to believe that those voluntary efforts will continue to provide such results.

Efforts to improve the health of the nation should center at the community level—in Kansas as well as in every other state. Accordingly, we urge local businessmen and others concerned to take all feasible steps to support community health activities, including support for local health groups. Businessmen should continue to participate actively in developing the arrangements needed to keep local activities on a sound and increasingly effective basis.

There are shortages of health personnel and of health facilities in some areas. Attention is called to the action of the 1949 Kansas Legislature in moving to meet these shortages through the appropriation of approximately \$3,800,000 for use in expanding medical training facilities in Kansas. The Kansas State Chamber of Commerce is proud to have been among the first of the state-wide organizations to give its active support to this measure. Sound future proposals designed to remedy such shortages may likewise expect to have the support of this organization.

The provision of medical care for the indigent is basically a responsibility of the local community. State social welfare legislation with local application is designed to make adequate medical care available to the indigent. Medical programs for the indigent are now in operation in Kansas in all 105 counties under one of four general plans: insurance program based on a contract with the county medical society, the fee system, the county physician plan, or the lump sum payment plan.

Much of the health progress of recent decades is attributable to the effectiveness of public health work. Important contributions have been made at all governmental levels—federal, state, and local. Evidence of this is found in the fact that the maternal death rate in Kansas has been reduced from 6.9 per thousand in 1916 to 1.7 in 1945 and .61 in 1950. Each governmental level has a role to play in the public health field; there are tasks for which each is particularly fitted. Sound, well-thought-out legislation, designed to strengthen public health work at each level, should be supported.

The remarkable growth of voluntary, non-occupational prepayment insurance in recent years has been of great value in enabling individuals and groups to meet the cost of modern medical care. Such insurance is now widely available, both through the indemnity contracts of insurance companies and through the service contracts of non-profit plans. These voluntary efforts should be encouraged. In particular, communities are urged to participate in prepayment group insurance plans to aid citizens in better meeting their health needs.

Proposals for government-administered health insurance are opposed because:

There is no evidence of a present crisis in the health field. United States medical care is far superior to that of any nation, some of which have compulsory medical care plans.

The term "free" medical care has been used falsely. With estimates of the ultimate costs of such insurance approaching 8 per cent to 10 per cent of covered payrolls to be split between employer and employee, we believe such costs to be prohibitive. Payroll deductions and payments by self-employed would, if sufficient to cover the cost, substantially increase the current tax bills of each participant. Failure to meet costs in this manner would necessitate heavy withdrawals from the general treasury, every penny of which comes from the taxpayer's pocket.

Certain abuses of the system by selfish and neurotic patients appear unavoidable with the result of overcrowding health facilities to the exclusion of many of the bona fide sick.

Lowering of the quality of medical care will result from the loss of personal contact between physician and patient—to the end of ultimate loss of the basic ingredient of good medical practice, the human touch. Assembly line techniques and hurried examinations will be coupled with the probability that patients will have no assurance that they will be able to select *and get* the doctor of their choice.

No compulsory health plan can guarantee medical service to all. Only as doctors and health fa-



cilities are available and their time can cover all those requesting attention can any plan provide complete medical care coverage.

Such plans would eliminate all citizens' initiative in the further development of present organized health services and substitute for it a sterile bureaucratic administrative control inherently in opposition to democratic processes.

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## 1951

In the economic pattern of our thinking in the next few weeks, months, and even years, let us not forget that many of our patients, friends and relatives have lost their homes, their personal belongings, their life's savings, and a few who have been buffeted by the waves of the heavy sea of life once too often, their spirit.

Let us remember that our greatest asset, our professional education and knowledge, cannot be washed away by the torrents of a cloudburst or the rising waters therefrom. To the farmer whose crops stand in the field unharvested or uncultivated, to the mechanic whose belongings were washed away, to the elderly retired couple who have lost their home, to every citizen whose livelihood depends upon the many flood stricken industries of our state, we can and must be patient and charitable.

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### An Editor Views Medicine

At the Conference of Presidents and Other Officers of State Medical Associations held at Atlantic City on June 10, 1951, Mr. Edwin F. Abels, publisher of the *Lawrence Outlook* and past president of the National Editorial Association, was a featured speaker. The title of his address was "An Editor Views Medicine."

He presented an excellent paper and was easily the highlight of the meeting. His friends from Kansas who heard him were proud of what he said. Much of his address could well be reprinted. It was filled with good Kansas common sense and rich in applicable humor. In one place he told of the attitude of the National Editorial Association and its views toward socialism as follows:

Your friends, the publishers, have not stopped in their fight for better government. It is a never ending fight. In our spring convention held in New York City in April of this year the National Editorial Association, after the excellent address given by Dr. Louis H. Bauer, chairman of your Board of Trustees, passed the following resolution:

"Whereas we believe that an outstanding contribution, during the past year, to the cause of individual freedom and the maintenance of our American way of life has been the nation-wide campaign

by the American medical profession in behalf of freedom for both physicians and the cause of political freedom.

"Therefore, Be It Resolved that we do publicly commend the doctors of our country for their enlightened contribution to the American way of life; and do recognize this public service so ably performed by the American Medical Association, its officers, its Board of Trustees, its Campaign Committee, and by Clem Whitaker and Leone Baxter, who directed the National Education Campaign of the American Medical Association."

The resolution was passed without a dissenting vote. Today, it is my honor and privilege to bring you greetings from our membership and to compliment you for your firm stand against the socialization of your profession. It is our sincere hope that other national organizations will follow the example set by the great American Medical Association and arouse their membership to the peril that is upon us. The philosophy of our enemies is to divide and conquer. They expect to take us one group at a time. It is the duty and most important function of every national association, whether it be lumber dealers, hardware merchants, men in the various fields of transportation, men in the professions, newspaper publishers, doctors or any and every other type of national organization, to make every effort to block any and all government encroachment on business. We must stand together as a unit when our liberties and freedoms are at stake. This was one of the main themes in the National Editorial Association convention held at Seattle just a few days ago, and it has been stressed in practically every meeting of the association during the past decade.

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### Federated Fund Raising

*Editor's Note. This editorial on a much discussed subject was prepared by request by a person experienced in fund raising campaigns.*

There is a lot of talk these days about "federated" fund raising. If the issue hasn't been raised in your community as yet, it's a 100 to one shot that it will be, and you, more than likely, will be asked to express an opinion on how you feel about it.

The idea of the "federated drive" is based on the principle that all charitable, educational, and health agencies, which now raise their funds through separate and independent financial campaigns, could all be lumped together into a once-a-year, super-community chest which would raise enough money for everything and everybody. The proponents of this idea, aided, abetted, and encouraged by the National Council of Community Chests and Councils, point out that such a plan would (1) eliminate the

so-called "bother" to the average business and professional man of being solicited for a worthy cause at every whip-stitch, and (2) that it would protect the relatively small group of public-spirited citizens in each community who are called to work on independent drives several times during the year.

The idea seems like a good one on first glance, but it is being questioned by an equally sincere group of citizens who feel that there may be more involved in the problem than meets the eye. The resistance movement is being headed for the most part by the "national voluntaries" which includes the Red Cross, the American Cancer Society, the National Foundation for Infantile Paralysis, and the National Tuberculosis Association.

Since the medical profession was primarily responsible for bringing into being at least three of these organizations, and since, as in the case of the American Cancer Society, at least half of the members of the governing boards are doctors, it might be well to take a look at their point of view.

There are numerous reasons why these national organizations feel responsible for maintaining their separate identities in fund raising, the most important one being the devitalization of agency activity when they are required to join with many other organizations. It has been the experience of all these organizations that when fund raising responsibility for any given cause is taken away from the agency, the interest in the cause disintegrates and the volunteers rapidly lose interest.

Take the case of the Kansas Division of the American Cancer Society, for example, whose primary responsibility at the state level is public education. It is generally believed in medical circles that while cancer is generally fatal if untreated, or if treated too late, the fact is that cancer is among the most curable of the major causes of death. At the present time there is a dramatic differential between what can be done and what actually is being done in every type of cancer.

On the basis of what is now known about the disease, the only way to reduce this differential is through public education, since the cancer patient must be motivated to shorten the critical delay between the discovery of symptoms and his desire to seek competent medical advice. The Kansas Division is extremely proud of the fact that its public education program is carried on by volunteers, and that its effectiveness is possible only because of the devotion and interest of this large group of public spirited citizens. Therefore the Society feels that it could not perform its full responsibility to the people of the state if it were asked to subscribe to any plan which would undermine the interest and effectiveness of its local county units.

Another strong argument against the single, united fund campaign is that it cannot possibly include all the financial appeals which will arise during the course of a year. Most local communities have a community chest drive in the fall which raises money for local welfare and recreational needs. In addition, the polio drive in January, the Red Cross drive in March, and the Cancer Crusade in April, are the only appeals which are organized on a personal solicitation basis. Even if all these organizations were included in a federated drive, they would constitute only a small portion of the appeals which the average business man is called on to support. The various local organizations such as churches and youth groups would still be free to "bother" the business man for their own particular appeals for funds.

Therefore, any self-constituted group which attempts to organize an all-inclusive campaign faces a much greater responsibility than the relatively simple task of raising money. They virtually promise their constituency that no other requests for funds will be made. In making such a promise, they imply a control over the free choice of the people as to how, to whom, and when they can give of their means as an expression of their interest in a given cause or program. Most Americans believe that people should have the right to decide for themselves what they will give, and how much; and that no organization, no matter how wise and efficient it may be, should take upon itself the power to compel people to give other than in accordance with their own wishes.

The people of Kansas have consistently believed that monopoly and dictatorship, whether it be in the field of business or philosophy, is bad; and that it would be a tragic thing from the standpoint of free enterprise to support any movement which is so clearly opposed to individual initiative. There are many who feel that the arguments against federated fund raising are based on the same principles as the arguments of the medical profession against socialized medicine.

Obviously there are two sides to this problem, and both sides are going to need patience and flexibility to reach an amicable agreement. We call these points to your attention in order that you may be aware of some of the basic principles involved when you are called on to express an opinion or to be a member of a planning group in your community.

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Please notify the Executive Office of the Kansas Medical Society, 512 New England Building, Topeka, Kansas, of any change in address.



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## SOCIALIZED MEDICINE

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*This is the 21st of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

### The Communist Threat to America

The *Texas State Journal of Medicine* printed a speech by Martin Dies, former United States Congressman and chairman of the House Committee on Un-American Activities, which was delivered before the annual session of the Texas Medical Association, May 1, 1951. We sincerely recommend the following excerpts from this remarkable address to the medical profession of Kansas for some of the most revealing information yet to be published on Communist activities in the United States.

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In 1938, when we seized the records of the Communist Party and its subsidiary and auxiliary organizations and all of the numerous fronts established by the Communist Party, we discovered among other things that literally thousands of so-called Americans had traveled, at the expense of the Soviet government to Russia, where they had been educated in the labor schools of Leningrad and Moscow. They had been taught the use of explosives, how to sabotage, parliamentary tactics, and how to appeal to class warfare; how to arouse hatred against the so-called ruling class. . .

In 1938, our Committee, after receiving the indisputable evidence, unanimously found that nearly one-half of the executive officers of the C.I.O. were members of the Communist Party and that 21 international unions affiliated with the C.I.O. had entrenched communist leadership.

When we got that evidence in the beginning, I went to John L. Lewis and pleaded with him to cooperate with the Committee in expelling these traitors from his organization. Mr. Lewis arrogantly and indignantly said: "Yes, we have communists in the C.I.O. We have Catholics, Gentiles, Jews, and Protestants, and we have Democrats and Republicans, and the Communists have the same right to occupy positions of leadership in our organization as anyone else."

. . . I was told that funds for my Committee would be withheld if the hearing on communism in the C.I.O. was held.

Then I received a summons to the White House,

and President Roosevelt said: "You cannot go forward with this investigation because if you do, you will antagonize the C.I.O. in the doubtful districts and states of the United States, and it will hurt the Democratic Party."

I then turned to the President and said, "I love the Democratic Party, but I can never forget something my father said to me before he died. He said, 'Son, some day you may aspire to public office and some day you may attain an important position of trust; some day you may have to choose between your country and your party. If that day ever comes, make no mistake—choose your country, because your country is infinitely more important than any political party on earth.'"

. . . The Un-American Activities Committee discovered also from the records of the Communist Party that some 2,000 government officials and employees belonged to this communist conspiracy. . .

I pleaded with the President as fervently as any man could plead with another to do something about it. The President turned with a smile upon his face and said, "This thing is not as bad as you think. I am no communist and I don't agree with communism; but I have several good friends who are communists, and I think we can and must do business with Stalin and that the Soviet Union is our natural ally."

. . . What did they (the communists) do? They exerted more pressure on the politicians in Washington than all the rest of the people of this country put together because they were the balance of power in many districts and in many states. . .

That was the beginning of socialized medicine. That is the reason that in 1945 the Federal Security Agency issued a pamphlet in which it boldly announced that the purpose of the Social Security program was to socialize the United States; that we could not bring about socialization except by such methods. In 1949 Mr. Oscar Ewing, who was then head of the Federal Security Agency, reprinted and redistributed that pamphlet. Mr. Ewing, who in Houston characterized the American medical profession as stupid and ignorant, is doing more for the cause of communism in America than any known communist because whether he knows it or not, he is advocating the very essence of communism.

Our Committee sought in every possible way to get rid of those 2,000 communists in the government not only because they were stealing invaluable secrets, but because they were shaping and influencing our foreign policy to serve the cause of Stalin throughout the world. . . We told the country that the 2,000 were stealing every important secret of

our government and that Russia would be able to rearm immediately and threaten the world.

Nothing was done about it. . .

In desperation in 1941 I went before the House of Representatives and made a motion that we appropriate \$100,000 to the Department of Justice with instructions for the Department to take our evidence, re-examine it, and re-investigate and, if they found we were right, to expel the traitors from the government. The Congress supported my motion, 20 to one, and we gave to the Department of Justice \$100,000, but the Department refused to carry out the investigation.

At the next session, I came before the Congress again and reported that every effort we had made to get the eyes and ears of Stalin out of the government had failed. I then made a motion to strike from the appropriation bill the items providing for the payment of salaries to the worst offenders. Again the House supported me, and we struck the items from the appropriation bill in 1941, just before the outbreak of war. The President and the Executive Department defied Congress and kept those communists on.

What happened? They were able to supply Russia with invaluable secrets and enable Russia to speed up her rearmament by 25 years. Anyone who tells you that Russia would have discovered the atomic bomb process and all of these other secrets, if left to her own ingenuity and inventiveness, certainly does not understand Russia or the history of inventions. No slave state can invent. No slave state can conceive. If Russia had not been able to steal these secrets from America, it would have been 25 years before she could have built up the mighty war machine that now threatens the world. . .

What are you going to do about it? You have been the target of the abuse and the propaganda of this United Front from the beginning. Why? First, because the United Front leaders realized they could never communize America until they first have enslaved the medical profession and its allied groups. . .

You thought for a long time that all you had to do was to be good doctors, minister to the sick, and be intelligent and helpful to your community. That is not enough. You have to learn what every other decent American who wants to preserve the heritage of his country must learn: You must enter the field of politics. You must become interested in the preservation of free government. If you don't you will lose it in the next 10 years or sooner.

Not only are your patients deeply interested in this cause, not only do you have a solemn and positive duty to all the patients of America to keep this

leprous hand from the throat of the medical profession, but every industry and every business in this country is equally interested with you.

The moment socialized medicine fastens the chains upon your profession, the next step will be socialism in every other industry and in every other business in our land. Your task is to go forth and convince all our people that this is not your fight alone. It is the fight of every decent American who is opposed to the omnipotent state and who believes in the dignity of the individual and in the inviolability of man. It is the fight of everyone who wants to preserve the bright heritage of freedom so his children and grandchildren and all the children that are yet to come into the world may live in this land of freedom and opportunity.

### Clinical Conference in Kansas City

The 29th annual fall conference of the Kansas City Southwest Clinical Society will be held October 1-4, inclusive, in the municipal auditorium, Kansas City. The scientific program will include papers by well known guest speakers, and features will be daily medical and surgical round table luncheons, a clinicopathologic conference on Monday evening, entertainment on Tuesday evening, panel discussions and sectional lectures.

Among the guest speakers are the following: Dr. Edward F. Bland, Boston, Dr. Verne R. Mason, Beverly Hills, and Dr. H. Marvin Pollard, Ann Arbor, internists; Dr. John W. Cline, San Francisco, Dr. Warren H. Cole, Chicago, Dr. Mims Gage, New Orleans, and Dr. Herman E. Pearse, Rochester, New York, surgeons; Dr. A. W. Adson, Rochester, Minnesota, neurosurgeon; Dr. Ross Golden, New York, radiologist; Dr. William F. Mengert, Dallas, obstetrician-gynecologist; Dr. Harold A. O'Brien, Dallas, urologist; Dr. Heyworth N. Sanford, Chicago, pediatrician; Dr. George Saslow, St. Louis, neuropsychiatrist; Dr. J. R. Schenken, Omaha, pathologist; Dr. I. S. Tassman, Philadelphia, ophthalmologist; Dr. Edward B. Tuohy, Washington, anesthesiologist.

Dr. John W. Cline, president of the American Medical Association, will present the citizen-physician problem, "The Responsibility of the Individual Physician," on Tuesday morning.

Daily features will include anatomical demonstrations, scientific and technical exhibits, scientific movies, and radio broadcasts.

A registration fee of \$20 will be charged. Complete information may be obtained from the society's executive office, 630 Shukert Building, Kansas City 6, Missouri.



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## BLUE SHIELD

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### Blue Shield Income Levels

The service provision of the Blue Shield Agreement is regarded as the substance of the medical profession's effort to provide an economical prepayment plan to people of low incomes. The new income levels of Kansas Blue Shield effective August 1 are as follows:

Single Member	\$2,000
Family Member	\$3,000

These income levels were arrived at after very careful consideration by representatives of the medical profession. In meetings held in all councilor districts with district Blue Shield Relations Committees, a most thorough discussion was carried out in regard to what the income levels should be. The majority of district representatives seemed to feel that the family income level should be about \$3,600 with perhaps a lower amount for married couples without children. In fact it was the general consensus of all physicians considering the subject that the income levels should be \$2,000 for single persons; \$3,000 for husband and wife; and \$3,600 for families. When final decision was reached on this subject by the Blue Shield Board in its annual meeting, it was decided to adopt a more careful approach to any change in the income levels.

The basic reason for adopting the maximum of \$3,000 for family members was that it is still quite possible that the Blue Shield Schedule of Payments contains some inequities; that to adopt a relatively higher income level which would bring a large percentage of patients into the service bracket might work a hardship on physicians in some areas. There was a general feeling that \$3,600 would encompass a fairly large segment of members in many localities. For example, in some areas the physician representatives felt that \$3,600 would take in almost all of their practice. Nevertheless, in those areas the doctors felt that the Blue Shield Schedule of Payments nearly equaled their going charges.

However, the Blue Shield Board acted wisely in adopting a policy of gradual change in connection with income levels. This subject was discussed with representatives of the members in member council meetings throughout the state. It did not emerge as a vital point in their consideration. But many members did feel that \$3,600 was reasonable in view of today's cost of living and the difficulty people would have in paying additional amounts to physicians over and above the Blue Shield payment. Some representatives of members made the point that the

combined Blue Cross-Blue Shield dues which would now amount to \$91.20 per year are about as much as people making \$3,600 can afford, especially since there are quite a few medical and hospital services not covered under the prepayment plans.

Certainly the subject of the income levels is one which should receive continuing study by Blue Shield Relations Committees and all participating physicians.

As of August 1, when the provisions of the new Blue Shield Agreement go into effect for most members, it is important that participating physicians honor the new income provisions. Questions have arisen as to the method of determining farm and other non-salaried income. Apparently there is no ironclad solution to this question, although a great deal of consideration was given to it. In order to help both the physician and the member arrive at equitable settlement in borderline cases, the Blue Shield Agreement contains the following clause:

"If the member's annual individual or combined family income exceeds the amounts stipulated above, or when there is reasonable evidence that the average annual income of *non-salaried* members for the three-year period immediately preceding service exceeds the amounts stipulated above, then the participating physician may charge the member the difference between his usual fee and the payment in the Blue Shield Schedule of Payments."

The doctors on the Blue Shield Relations Committee as well as representatives of members felt that the patient-physician relationship would obtain in almost all of these cases. In other words if the patient and the doctor will get together on a reasonable basis the chances are that very few arguments will arise out of this provision. The Blue Shield staff stands ready to help any physician work this problem out whenever it becomes acute between him and his patients. It would seem that the burden of proof as to qualifying under the low income provision lies on the member and the member should be willing to supply the physician with any information which he requests in establishing a member's income.

Britain's national health service celebrated its third birthday last month and, according to reports reaching the American Medical Association, a half million patients are on hospital waiting lists and more than 10,000 tuberculosis cases are awaiting admission to sanatoria. Since the service started in 1948, druggists have dispensed an average of five prescriptions a year for every man, woman, and child in the country. During the current year, nationalized medicine will cost Britain 1.3 billion dollars.

## Case Report from the University of Kansas Medical Center

## "Dumping Syndrome?" A Fatal Case

## Clinical Pathological Conference

Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, roentgenology, surgery, and the junior and senior classes of medical students.

## Case Presentation

Z. T., a 40-year-old white male, was admitted to the Kansas University Medical Center on September 9, 1950, and expired November 14, 1950.

Chief complaints were edema, dermatitis, and diarrhea.

Past history: A diagnosis of duodenal ulcer was made in June, 1946. Improvement in symptoms followed medical management. Symptoms recurred in February, 1948. Medical management was unsuccessful on this occasion because obstruction occurred. A subtotal gastrectomy was done in October, 1948. A gastro-enterostomy was done with difficulty because of the low lying position of the jejunum. The pathologist reported it as chronic duodenal ulcer. Weight at the time of surgery was 165. Immediately after surgery, diarrhea with six to eight watery stools daily developed. Weight apparently was maintained until October, 1949, but then fell gradually to 119 on admission here. Anorexia became marked during this period; diarrhea persisted. Edema developed in May, 1950. Thrombophlebitis developed in June and September, 1950.

Physical examination showed malnutrition, anasarca, avitaminosis, and ascites. The temperature was 100.4°F., pulse 100, respiration 18, and blood pressure 110/70. Head and neck were negative except for a marked glossitis. The heart was not enlarged to percussion; sounds were clear and regular with a Grade I blowing systolic apical murmur. Fine moist rales were heard in the lung bases. Liver could be palpated two cm. below the costal margin. A diffuse exfoliative dermatitis was noted over the body. No other physical findings were notable.

Laboratory findings on admission were as follows: Urine was acid in reaction with a specific gravity of 1.010, albumin negative, sugar negative, and microscopic negative. Complete blood count showed 3,550,000 red blood cells; 9,250 white blood cells; 66 per cent hemoglobin; 77 polys, 19 lymphocytes, and four monocytes. Serology was negative. N.P.N. was 24.1 milligrams per cent, creatinine 1.2 mgm. per cent, sugar 56 mgm. per cent, chloride 73 milliequivalents, sodium 145 meq. and potassium 6.5 meq. Stool fat: total weight 16 gms. (dry), fat 29.3 per cent, free fatty acid 2.7 per cent, neutral fat 23.4 per cent, saponified 3.2 per cent. Eight stools were negative for pathogens, ova and parasites. Blood

cultures were negative. Agglutinations for typhoid, paratyphoid and brucella were negative. Liver function studies showed the following: alkaline phosphatase 8.5 King-Armstrong units, total serum bilirubin 0.5 mgm. per cent, bromosulphthalein 0, cephalin cholesterol 3 plus, thymol turbidity 3.5 units, serum albumin 1.5 gm. per cent, serum globulin 2.0 gm. per cent, urine urobilinogen 0.3 mgm. per cent.

On October 5, 1950, the complete blood count showed 5,310,000 red blood cells; 11,600 white blood cells; 97 per cent hemoglobin; 87 polys, and 13 lymphocytes.

On October 31, 1950, laboratory findings showed the following: N.P.N. 30.8 mgm. per cent, creatinine 1.2 mgm. per cent, carbon dioxide 20.7 meq., sodium 150 meq., potassium 3.5 meq., chloride 106 meq.

On November 12, 1950, the findings were: N.P.N. 36 mgm. per cent, creatinine 1.2 mgm. per cent, sugar 50 mgm. per cent, carbon dioxide 20.3 meq., sodium 138 meq., potassium 5.5 meq., and chloride 113 meq.

On November 13, 1950, findings were: N.P.N. 36 mgm. per cent, creatinine 1.2 mgm. per cent, sugar 42 mgm. per cent, carbon dioxide 20.7 meq., sodium 137 meq., potassium 3.8 meq., and chloride 111 meq.

Hospital course: Intermittent fever to 101.6°F. persisted until October 9, 1950. Temperature remained normal thereafter. Thrombophlebitis developed in the left leg on September 24, 1950, and the patient had a pulmonary embolus on September 26, 1950. The left common femoral vein was then ligated on the same date. The patient was given massive vitamin therapy with a high carbohydrate, high protein and low fat diet. At no time did he eat well. Banthine was given in an attempt to control the diarrhea, but without success. Improvement followed transfusions of whole blood. Attempts to remove edema with mercurials were successful but edema fluid reappeared promptly after therapy ceased.

On November 1, 1950, ACTH was started at 10 mg. every six hours. This was accompanied by large doses of vitamin C and potassium chloride, grams 1.0 four times daily. Little, if any, improvement was noted on this regime. On November 13, 1950, the patient became comatose. Following transfusion with 500 cc. whole blood, he awoke but seemed somewhat lethargic the remainder of the day.



On November 17, 1950, he developed pulmonary edema, lapsed back into coma, and expired at 11:30 a.m.

Question: Within how long a period of time after they had been raised to normal did the serum proteins revert to this alarmingly low level?

Dr. Mahlon H. Delp: Actually the serum proteins were never at a very high level. While they were temporarily elevated at times when his edema was lessened following plasma, albumin, or transfusions, the protein level stayed up only a few days.

Question: How did the blood pressure act in the last few days?

Dr. Joe Stockard (Medicine Resident): It was unchanged. It remained at essentially the same level at all times until the terminal hours when it became low.

Question: Were any barium studies done to determine the motility of the gut, its operation or rapidity of descent?

Dr. Stockard: Yes.

Question: Did he ever vomit any fecal material?

Dr. Delp: No, he did not. We do have a description of this operation that was performed on him—a rather detailed description which we can go into a little later.

There are a couple of other features that I think perhaps Dr. Stockard did not mention. One of this patient's major complaints was distention. It was worse when he had more ascites, but not necessarily so. It was for that reason he refused to eat, although you must understand that he was emotionally unstable and difficult in many respects. I think this refusal to eat sometimes was because of true physical discomfort.

We have some EKG's at this time.

Dr. E. Grey Dimond (Cardiovascular Section): The most striking thing about the EKG taken on the day of admission is the absence of T waves in Lead I and their depression in the chest leads. The QT interval is approximately 0.46 second. Was his potassium low at that time?

Dr. Stockard: It was within the lower limits of normal.

Dr. Diamond: The EKG of November 13, the day before his death, showed regular rhythm with a sinus bradycardia for some reason. The QT interval is prolonged. I would suspect that he had hypopotassemia. As to why he would have marked bradycardia, I don't know. Did he have it clinically, Dr. Delp? Was it striking?

Dr. Delp: No, it was not striking.

Dr. Dimond: His rate here would be 60 which is rather unusual for a man who had pulmonary edema, an embolism, and has anemia.

Dr. Galen M. Tice (Roentgenology): The chest

film of September 9 was considered to be essentially normal. The heart is normal in contour, size, and pulsation. A film of the abdomen didn't show any unusual gas shadows.

On the 11th of September, an examination of the gastro-intestinal tract was done. Only a small segment of stomach, about 1/20, remained. The barium passed through the stomach so extremely rapidly it was hard to get a film to show the stomach. The barium passed through within three minutes. It also passed rapidly through the small gut. At the end of 1½ hours, no barium was left in the stomach and some had entered the colon. At three hours most of the barium was in the ascending colon. I didn't see any stomal ulcer or any other pathology relating to the upper gastro-intestinal tract.

A barium enema was done. I was somewhat concerned over a constriction close to the splenic flexure in the transverse colon. A subsequent evacuation film was done and I was inclined to think the colon was normal on the second examination.

We were impressed with the fact that the remaining portion of the stomach emptied extremely rapidly.

#### Differential Diagnosis

Mr. Chester Scott (Medical Student): In considering the differential diagnosis of this case we have to think of the causes of chronic diarrhea. These are quite numerous and include chronic ulcerative colitis, tuberculous enteritis, bacillary dysentery, amebic dysentery, parasitic dysentery, regional enteritis, sprue, pancreatic disease, carcinoma of the colon and many others.

I think that parasitic, bacillary, and amebic dysentery can be ruled out fairly easily by the eight negative stools for ova, pathogens, and parasites. Also he had negative blood cultures and negative agglutination tests. Ulcerative colitis can be thought of but it is usually characterized by exacerbations and remissions of bloody diarrhea with mucus and pus in the stools. The x-rays of the colon are definitely not characteristic of ulcerative colitis. Sprue may be thought of perhaps, but here again the picture is not at all typical. Such patients have frothy foul stools, increased amount of fat, and develop a macrocytic hyperchromic type of anemia.

Regardless of the cause of the diarrhea, the patient certainly had severe chronic malnutrition and avitaminosis. This is evidenced by the anorexia, loss of weight, glossitis, dermatitis, anemia, severe hypoproteinemia and anasarca.

I believe the dumping syndrome has to be considered in this patient although it is a very severe picture for this syndrome. The dumping syndrome occurs in five to 25 per cent of all cases of subtotal gastric resections. It also occurs following simple

gastro-enterostomy and even in some normal individuals.

There are two types of the dumping syndrome, the early postprandial type and the late postprandial or hypoglycemic type. The clinical picture usually begins shortly after surgery and the patient has symptoms 10 to 20 minutes after eating. In some cases they have prodromal symptoms which include fullness in the ears, licking of the lips, and swallowing. They also often have hot flashes, nausea and vomiting, abdominal pains, palpitation, sweating, weakness, and dizziness. Quite often these patients have symptoms only after breakfast or after a certain meal, or after eating too rapidly. They often have marked psychoneurotic stigmata.

Theories of etiology are the hypoglycemic theory, hyperglycemic theory, and the theory of dilation and irritation of the jejunum. I think the latter theory is probably as good as any. It holds that the presence of hypertonic solutions in the jejunum draws enough fluid into the lumen to cause marked dilation.

In this patient one certainly has to consider an inadvertent gastro-ileostomy. There are 27 cases of this reported in the literature and probably most of them have been associated with inexperience in surgery. Usually the surgeon simply fails to properly identify the jejunum by following it down from the ligament of Trietz. Such patients usually have an unexplained diarrhea and sometimes vomiting with abdominal pain. They also have marked loss of weight. The diarrhea develops shortly after surgery. Generally, it can be diagnosed by x-ray studies showing rapid filling of the colon after barium swallow.

My diagnosis in this case is a severe dumping syndrome with chronic malnutrition and avitaminosis. I think the terminal picture was acute pulmonary edema and cardiovascular collapse.

Dr. Delp: Do you think the electrolyte disturbance had anything to do with his exodus?

Mr. Scott: I think he did have some electrolyte disturbance and possibly it did. His potassium was cut down to 3.5.

Dr. Delp: Dr. Allen, you saw this patient at a distance for a long period of time. Do you have any ideas about his underlying disease?

Dr. Max Allen (Medicine): This patient's description of the distention and fullness which Dr. Delp mentioned—being of such severity that he almost refused to eat—was certainly classical of what has been reported in the dumping syndrome. Theoretically it is due to the rapid distention of the jejunum as the stomach empties. In many respects it is a disturbance of nutrition, of protein and electrolyte deficiencies. The diarrhea which occurs quite commonly in patients with starvation who are then

fed might seem also to be of the same nature as what happened here.

Because the patient had anasarca, anemia and symptoms of jejunal distention, we felt that it probably was a dumping syndrome. Although usually you don't expect these patients to die, they do sometimes.

Dr. Delp: Dr. Allen, do you recognize a syndrome of irreversible starvation?

Dr. Allen: Yes. I think there is such a thing. The underlying factor of such severe starvation is perhaps not too well worked out. Perhaps it is associated with defects in the enzyme systems in the liver which have to do with gluconeogenesis and glucolysis on the one hand and synthesis and the deamination of proteins on the other. I think it has been shown that proteins and amino acids are not deaminized well by the livers of starved patients. Perhaps there is an end point beyond which return to normal function of deamination is impossible.

Dr. Delp: Dr. Schafer, I would like to have some comments from you after the pathologists have reported on this case. But would you care to comment now?

Dr. Paul Schafer (Surgery): We were asked to see this patient after he had the pulmonary embolus. We took what we thought was the most conservative course open to us. We did a simple ligation on the right and thought we were sure that the embolus had come from that area. As I recall, he had a history of an old thrombophlebitis in the opposite extremity. Anyway, we don't feel that contributed a great deal to the final outcome.

I would like to comment that I have never seen such an emaciated malnourished individual without there being some serious mechanical defect. I have seen the dumping syndrome in fairly severe form but I don't believe I have ever seen it quite this bad, and yet that was the diagnosis we thought correct.

Just to be on the record here, I am at a loss about the inclusion of this comment from the previous operating surgeon that he had an extremely low-lying jejunum. I have never encountered a low-lying jejunum. That ordinarily means that the parts were not properly selected for operation. I am at loss to understand the meaning—perhaps the inference is that he had such a large pancreas that the root of the mesentery was displaced inferiorly. With that implication carried on over into the explanation of the difficulty, one would certainly be interested in knowing more details about his ability to handle fat. When we saw him, we were not seriously considering this a fatty diarrhea—at least I don't recall that discussion.

#### Pathology Findings

Dr. William Spicer (Pathology Resident): General inspection revealed the body to be that of a 38-year-old white male who had extreme muscular



atrophy and marked emaciation. The body was approximately six feet in length and appeared to weigh about 90 pounds. There was marked pigmentation over the forearms, pulplish in color, and rather large raw areas of ulceration. The skin over the whole body was dry and sparse with noticeable lack of resistance. There was generalized anasarca, involving particularly the legs and scrotum.

The peritoneal cavity contained 4000 cc. of straw-colored fluid. There were numerous adhesions in the region of the epigastrium and in the right upper quadrant.

The thoracic cavity contained 1000 cc. of fluid on the right and 500 cc. on the left. The left lung appeared to be partially atelectatic in the lower lobe with a dark, purplish discoloration and a spongy feeling. The relation of the organs was normal.

The pericardial sac contained about 50 cc. of straw-colored fluid. There were no adhesions. The heart weighed about 200 grams. It was small and appeared flabby and dilated. The tricuspid valve ring measured 12 cm., the pulmonary 8 cm., the mitral 10 cm., and the aortic 8 cm.

The right lung weighed 875 grams, was partially noncrepitant, and had a spongy consistency. The cut surface exuded a large amount of brownish fluid. The right lower lobe showed one or two small areas of consolidation which were grayish in color. The bronchi and pulmonary arteries were patent. No thrombi or emboli were noted. However, the left lung weighed 525 grams. This lung was crepitant throughout except the lower one-half of the left

lower lobe which was atelectatic, spongy, and a dark purplish color. The lungs were essentially non-contributory.

The liver was also small, weighing 905 grams. The spleen, the pancreas, and the kidneys were essentially non-contributory as were the bladder, prostate, and adrenals.

The gastrointestinal tract is illustrated in the line drawing. You'll have to visualize the esophagus and stomach as already having been cut open. There was approximately 10 cm. of stomach from the cardiac end to the line of anastomosis. Apparently this stump was atrophic, markedly dilated. From the stomach there were three openings in this anastomosis. One of them went off down into the left lower quadrant where it entered apparently what would be called the internal herniation or peritoneal pouch containing a large amount of the small intestine. From this pouch, apparently, another portion came out and this led up to a blind pouch in the duodenum. The other connection of the anastomosis ran approximately two feet into the cecum and then the rest of the bowel went off all right. In other words, what I am saying is that all of that is a non-contributory portion of the bowel including all the jejunum, all the duodenum, and part of the ileum—leaving only two feet of the ileum where a gastro-ileostomy was performed. This was not distended, it was not necrotic, the blood supply was good.

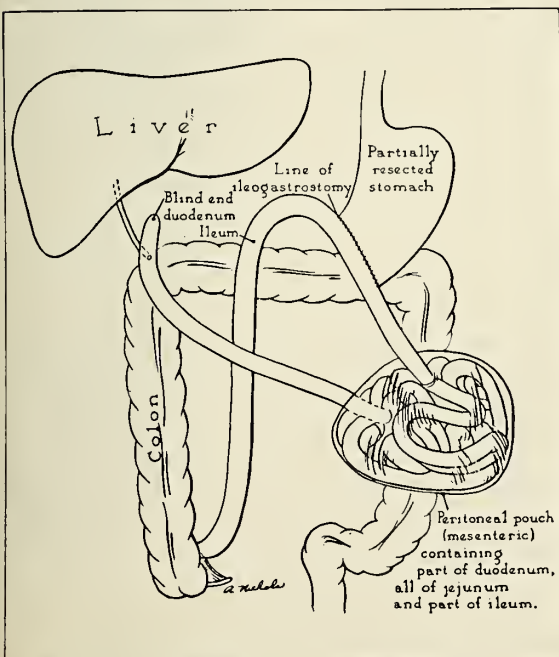


Figure 1. Line drawing.



Figure 2. Three minutes after ingestion of barium, the small segment of the remaining stomach is particularly empty. The meal is passing rapidly through the small gut.

Provisional gross anatomical diagnoses, therefore, would be midline abdominal surgical scar, partial gastrectomy with gastro-ileostomy, emaciation with ulceration of the skin, generalized anasarca with hydroperitoneum and bilateral hydrothorax, pulmonary infarctions, acute cardiac dilatation, chronic passive congestion of lungs and liver.

Dr. William Wyatt (Microscopic Pathology): Pathologically, this is a case showing on histological examination the usual findings of starvation. The gross diagnosis has already been given. The only thing that we might add to that is a pretty severe parenchymatous degeneration found in the heart, liver, and kidneys. There was also a focal inflammatory reaction, a bronchopneumonia, in the lungs.

Dr. H. R. Wahl (Pathology): This patient had all the evidence of a nutritional edema. There was fluid in all the serous cavities. In fact, it showed the striking picture that we see in all conditions of inanition. This looked like a patient who had been starved to death. Another interesting finding was the unusual dilatation of the stomach. The whole intestinal situation was rather difficult to work out. The liver presented a striking picture resembling acute hepatitis, although there was no jaundice.

#### Discussion

Dr. Delp: This is one of the most exasperating medical problems that I have ever encountered. It was exasperating simply because you felt upon looking at the patient and seeing him every day that there should be something that you could do to help him. Part of the time he did make an effort to eat and some of the time he did very well.

We had ample opportunity to study electrolyte imbalance because from day to day it was rather unpredictable whether we would have to give the patient hypertonic salt solution or whether we would have to restrict salt intake. The edema could be controlled by mercurial diuretics until the time a mercurial sensitivity developed. There are many problems connected with this case for which solutions are desirable.

For instance, what is the dumping syndrome? Just how or why does it occur? Even patients showing such severe malnutrition as this patient showed do eventually recover. What are the factors that have to do with recovery of some of these patients? How do they re-establish a new gastrointestinal mechanical balance? I don't know the answer to these questions but I believe they merit discussion. Why do some patients showing even as severe a malnutrition as this one eventually begin absorbing their food and return to normal adjustment?

Dr. Paul Schafer: I don't know the answers, but

I can certainly imagine that this comes very close to being an unworkable situation. In looking at those x-ray films, I was completely misled as to the amount of small intestine he had. In looking at the films, one would imagine in the light of his experience with other patients that there would be an adequate amount of small intestine there to allow this patient to maintain a reasonably normal state of nutrition.

Furthermore, from the films alone as an indication of how much functioning intestine is in the continuity of the GI tract, I would have imagined that there was a mechanical basis for his diarrhea. I do think this man clinically had what at least I have felt represented a functional difficulty of the type we call the dumping syndrome. I don't know what the dumping syndrome is. I am certainly attracted to the concept of a reflex mechanism being operative together with mechanical factors.

Patients I have seen with this syndrome have almost without exception responded to proper dietary management or at least they have shown an improvement clinically that coincided with the institution of the dietary program that tended to decrease the tonicity of their jejunum at the site of anastomosis. I have never before seen this severe a state of malnutrition in a patient who didn't have some other, more pertinent, explanation for the problem. I would like to comment about the operation. At the time of the gastric resection I presume the entrapment was existent before the gastrectomy, and probably there was no proper identification of the bowel.

I cannot begin to point to any one defect that caused this patient's death. Any one of several changes is so extreme as to be responsible for his death. For instance, the hepatitis, the unpredictable electrolyte change and particularly depletion, as well as the severe malnutrition, are features capable of causing death. In this particular patient I think we have primarily a mechanical problem.

Dr. Delp: Dr. Schafer, do you think that there can be stated arbitrarily any set length of small intestine that a patient must have in order to live?

Dr. Schafer: No. I don't.

Dr. Delp: Anybody have any opinions about that? Well, I suppose that you can't arbitrarily state that four feet or five feet of small intestine are absolutely necessary to life. Doctor Wagenstein has had a rather large series of patients with massive small gut resections for mesenteric vascular lesions of various types. Many of those did have tremendous amounts of small intestine resected and lived. I think all of those patients went through periods in which they manifested a "dumping syndrome." They had signs and symptoms very similar to this patient. But many of them did recover, some with 29 inches to 36



inches of small intestine. They apparently readjusted in some manner. I would like to know if there is any way of deciding who is going to readjust and whether or not there is any means that we can take to hasten the readjustment.

Do you have any opinion about that, Dr. Allen?

Dr. Max Allen: I don't think that glucose tolerance tests would help you determine which patient might be more apt to develop a hypoglycemic dumping reaction. Since we see this same situation with gastro-enterostomy without resection of the stomach at all, I don't think you can say that the amount of stomach removed is necessarily a factor.

As a matter of fact, one patient who had a gastro-enterostomy and still had a functioning pyloric channel through the duodenum, developed a dumping syndrome if he sat or stood after eating and also developed a late postprandial hypoglycemic reaction. This did not occur if he lay on his left side after eating. The radiologist in that case demonstrated that with the patient lying on his right side after eating, the major portion of the barium passed out through the duodenum and around through the usual channel, whereas while sitting or standing it went out through the enterostomy stroma. So I think that the lesion of the syndrome itself is due to distention of the jejunum plus the hypoglycemic phase of it.

Actually from all the evidence we have on the cases of this being studied, I think it is unusual that the patient doesn't develop a dumping syndrome. It is remarkable that 75 per cent of the individuals usually are able to adjust to the situation.

Dr. Delp: By inadvertent shunting this patient had only a small area of functioning small intestine. There have been isolated instances in which nutritional balance studies have been made on such patients, with regard to whether or not they are absorbing various food elements. All studies indicate that these patients absorb very little of their fat. Consequently you might wonder whether or not we shouldn't have administered to this patient some substance which would have hastened or helped the absorption of fats. Such patients likewise do not absorb as much protein as under normal circumstances. Many of them with as little as three feet of small intestine still absorb and utilize in the neighborhood of 70 per cent of their protein intake. The carbohydrates apparently are absorbed rather well, but it does seem that increasing carbohydrates results in distention, one of the factors causing patients so much discomfort following the development of this syndrome. That can easily be controlled by giving the patient a hyperalimentation diet.

Dr. Tice: I would like to make a couple of com-

ments before we dismiss. I think ordinarily responsibility for diagnostic help lies in the x-ray department. It can be of value in differentiating the location of the pouch—whether stomach or jejunum. I didn't even think of the idea of a full pouch, however, because I had full confidence in the surgeon. I assumed it was an artifact.

Regardless of whether it was jejunum or ileum, this man had a dumping syndrome to the extent that the stomach emptied rapidly. But would the small amount of ileum he had take care of his nutrition? If his stomach had retained the barium much better than it did, would he have done better?

That raises the question in my mind as to what causes the dumping syndrome. In another patient who had an operation for peptic ulcer with one-third of the stomach removed, he had no dumping syndrome at all. It emptied slowly and rhythmically. I wonder whether there is not more likelihood of disturbing the emptying mechanism when more of the stomach is removed. In the present case, almost all of the stomach was removed. I wondered whether it is necessary to remove so much of the stomach.

Dr. Delp: I must credit Dr. Stockard with having suggested that this patient did have something similar to what was discovered, but he was unable to sell it to anybody.

#### Summary

An obvious problem of severe malnutrition of long duration seemed easily explained as resulting from a "dumping syndrome." The patient's history of a peptic ulcer, the psychosomatic implications of this diagnosis and the observed emotional instability plus the accepted postoperative mechanical gastrointestinal dysfunction which such patients have, obscured the true problem. X-ray studies failed to show the extent of the small intestinal shunt and hence the clue to inadequate absorptive intestinal area for adequate nutrition.

The question as to just how much functioning small intestine is necessary for sustaining life is not settled and probably is subject to many variables.

Early recognition with reoperation could have altered this case.

Every fault of nutritional, fluid, and electrolyte disturbance could here be observed and their resistance to treatment was clarified only at postmortem examination.

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## ACTIVITIES OF MEMBERS

Dr. Howard E. Snyder, Winfield, left July 8 on a special assignment for the military in the Asiatic theater. He is serving as civilian consultant to the surgeon general and is inspecting medical installations in Pearl Harbor, Japan and Korea during a 30-day period.

\* \* \*

Dr. Edward D. Funk has closed his office in Topeka to begin a two-year residency in anesthesiology at the University of Kansas Medical Center.

\* \* \*

Dr. O. W. Davidson, Kansas City, was guest speaker at a meeting of the Wyandotte County Medical Assistants' Society recently.

\* \* \*

Dr. Frank A. Eckdall recently celebrated his 50th anniversary as a practicing physician in Emporia.

\* \* \*

A room in the new Newton Memorial Hospital Annex, Winfield, is being equipped as a tribute to Dr. E. E. Brooks, Burden, who is beginning his 44th year of practice in that community.

\* \* \*

Dr. A. C. Irby, who completed a residency in pediatrics at the University of Kansas Medical Center on July 1, has returned to practice in the Fort Scott clinic.

\* \* \*

Dr. M. M. Swan, formerly on the staff of the Winter V.A. Hospital in Topeka, is now associated in practice with Dr. Charles L. White in Great Bend.

\* \* \*

Dr. Newman C. Nash, Wichita, recently spent a month in Oak Ridge, Tennessee, attending the 21st in a series of courses offered by the Institute of Nuclear Studies.

\* \* \*

Dr. J. W. Randell, Marysville, announces that Dr. Frederick E. Totten is now practicing with the Randell Hospital staff. Dr. Totten is a graduate of the University of Kansas School of Medicine.

\* \* \*

Dr. James H. Holt, Wichita, recently became a diplomate of the American Board of Surgery.

\* \* \*

Dr. E. N. Robertson, Concordia, was speaker at a meeting of the Kiwanis Club in that city recently, speaking on the subject of the American Medical Association.

\* \* \*

The Hatcher Clinic, Wellington, reports that Dr. C. W. Payton, ophthalmologist, is now a member of

its staff. He is a graduate of the University of Kansas School of Medicine, and recently completed three years of study in his specialty at the University of Texas.

\* \* \*

Dr. Edwin Maier, a member of the staff of the Arkansas City Medical and Surgical Clinic during the past three years, reported for duty with the medical department of the Army Air Force at Tinker Field, Oklahoma City, last month.

\* \* \*

Dr. Dale Palmer, Wichita, addressed a meeting of the Practical Nurses Association in that city recently, speaking on the subject of chest surgery and methods of treating tuberculosis.

\* \* \*

Dr. G. H. Rhoades, who was a member of the staff of the Hertzler Clinic, Halstead, before he was called into the Army last spring, has accepted a permanent commission in the medical corps and has resigned from the clinic staff.

\* \* \*

Dr. Hugh H. Mathews, Topeka, has gone to the University of Oklahoma School of Medicine, Oklahoma City, for a residency in radiology.

\* \* \*

Dr. C. C. Hawke, Winfield, has resigned his position as physician at the State Training School to devote full time to his private practice.

\* \* \*

The Arkansas City Medical and Surgical Clinic announces that Dr. Warren S. Peiper, radiologist, is now a member of its staff. Dr. Peiper is a graduate of Northwestern University, Chicago, and has been resident radiologist at Northwestern University Medical Center and Passavant Hospital.

\* \* \*

Dr. J. T. Whallon has closed his office in Great Bend and has returned to his former home in Wichita.

\* \* \*

Dr. Thomas Perdue, Parsons, director of the Labette County health unit, is also serving Montgomery County in that field on a part-time basis.

\* \* \*

Dr. H. Preston Palmer, Scott City, and Dr. Gordon Voorhees, Leavenworth, were recently reappointed to four-year terms on the advisory committee to the tuberculosis sanatorium by Governor Edward F. Arn.

\* \* \*

Dr. C. E. Henneberger, Atwood, announces that Dr. K. L. Knuth is now associated with him in practice. Dr. Knuth is a graduate of Northwestern University Medical School and recently completed his internship at St. Margaret's Hospital in Kansas City.



Dr. Robert L. Kasha, formerly of Valley Center, is now practicing in Wichita.

\* \* \*

Dr. Paul L. Beiderwell, Belleville, announces that Dr. Dewey G. Nemas is now associated with him in practice. Dr. Nemas was graduated from the University of Kansas School of Medicine in 1950 and interned at Yale University Hospital, Middletown, Connecticut.

\* \* \*

Dr. John H. Lathrop recently completed a surgical residency at St. Joseph Hospital, Kansas City, Missouri, and will open an office for practice in Concordia this month.

\* \* \*

Three oil paintings by Dr. W. L. Anderson, Atchison, were selected for exhibit at a showing sponsored by the American Physicians Art Association in Atlantic City recently.

\* \* \*

Dr. Ralph B. Jordan, Holton, completed a year as president of the Rotary Club in that city last month.

\* \* \*

Dr. M. C. Newman, formerly of Topeka, has opened an office in Yates Center for general practice.

\* \* \*

Dr. H. L. Galloway, Anthony, announces that Dr. Clifford E. Jones is now associated with him in practice at the Galloway Hospital. Dr. Jones was graduated from the University of Kansas School of Medicine in 1950 and completed his internship at St. Margaret's Hospital in Kansas City.

\* \* \*

Dr. Jack D. Weaver, Wichita, has become a diplomate of the American Board of Ophthalmology.

\* \* \*

Dr. M. E. Christmann, Pratt, was speaker at a recent meeting of the Chamber of Commerce in that city. His subject was cancer control.

### Lilly Products Replaced

Under a long established policy, Lilly products destroyed by flood or the elements and not covered by insurance were replaced for retail pharmacies and hospitals affected by the flood in Kansas, Missouri, and Oklahoma. Representatives of the company in the stricken areas were instructed to make the replacement their first order of business. The policy of replacing stocks lost in disasters was in effect as far back as the San Francisco earthquake in 1906.

Lilly representatives in this area report that about 30 drug stores were completely wiped out by the swollen waters.

Along with replacement of stocks, Lilly employees worked overtime to prepare emergency orders of medicinals for the disaster area. A reserve supply of typhoid vaccine, kept in concentrated form, was packaged and shipped to the three-state area with tests for potency and sterility already completed.

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## DEATH NOTICES

Charles E. Yates, M.D.

Dr. Charles E. Yates, 78, died at his home in Baldwin, June 30. He was graduated from the University of Illinois College of Medicine in 1904, and began practice in Vinland, leaving during World War I to serve in the Army medical corps. After the war he practiced again in Vinland, later joined the Indian service in Montana, and returned to Kansas to open an office in Baldwin in 1940. He was an active member of the Douglas County Medical Society.

\* \* \*

Harold James Bagby, M.D.

Dr. H. J. Bagby, 56, an active member of the Montgomery County Society, died at Coffeyville Memorial Hospital, July 6, after an illness of more than a year. He was graduated from Northwestern University Medical School in 1920, and received his Kansas license in 1922, opening an office in Coffeyville. He was active in civic affairs and served as president of the Coffeyville school board for 12 years. Dr. Bagby was chief surgeon for the Missouri Pacific Railroad in the Coffeyville district for 27 years and served as company physician for several industries in that city.

\* \* \*

Carroll Dunham Armstrong, M.D.

Dr. C. D. Armstrong, 70, eye, ear, nose and throat specialist of Salina, died at his home, July 11. He had retired from active practice in 1949 because of poor health. He received his medical education at the Chicago Homeopathic Medical College, graduating in 1903, and then joined his father, the late Dr. W. P. Armstrong, in practice in Salina. He was an active member of the Saline County Medical Society.

## Senior Thesis from the University of Kansas Medical School\*

### Some Facts to be Considered in the Appraisal of Reports on Therapeutic Efficacy

W. A. Kells, M.D.\*\*

Kansas City, Missouri

#### Introduction

The vast number of new drugs, therapeutic devices, and empirically discovered remedies currently offered on the market, plus the innumerable articles appearing in the medical literature purporting to describe their properties, uses, and limitations, impose upon the student and the physician a most difficult task of deciding upon the efficacy and safety of their use in the management of the diseased patient. In order that such decision be reached, it is necessary that sound judgment be exercised. The only possible basis for such judgment is the careful and critical appraisal of a systematic study carried out upon the agent concerned. That failure to carry out such studies or to correctly evaluate the results therefrom can prove disastrous was shown by the experiences a few years ago with the now infamous "elixir of sulfanilamide."

The highly competitive nature of the American drug market coupled with the publicity policies of certain pharmaceutical houses may be said to be, in part, responsible for the repeated, unscientific, and in some cases harmful administration of certain preparations. It can, however, be pointed out that such would be impossible were it not for the latent readiness on the part of the medical student and some physicians to accept anything showing even a remote promise of alleviating human disease without adequate controls or observations. Regarding this, I believe that two points among many bear mentioning.

First, it is only comparatively recently that the psyche has been recognized as constituting an integral part of the therapeutic response. The concept that mental predisposition, on the part of the investigator as well as on the part of the patient, can alter therapeutic results has only recently appeared in the clinical controls of pharmacological investigation in the form of the "blind test."

Secondly, all scientific papers professing to deal with therapeutic efficacy must, of necessity, concern the reader with varying numbers of cases, results, trials, etc. These must be subjected to statistical pro-

cedures if the validity of the conclusions drawn therefrom is to be determined. The average medical student completes his senior year with a vague idea of the significance of the mean, the median, and the mode, but beyond this he is not prepared to go into the statistical analysis of the data presented. That such data may, upon cursory examination, appear to be quite significant, and upon careful analysis turn out to be totally devoid of meaning, is well pointed out by Newell and Cronkite.<sup>1</sup>

The above seem to be the chief reasons that worthless remedies are administered repeatedly, without vestige of scientific basis, or upon an empirical basis through which not only the patient but also the physician soon comes to suffer delusions concerning their therapeutic efficacy.

It is recognized that many of the efficacious therapeutic agents to date have been discovered empirically and that the diseased patient may respond to such regimes, notwithstanding the lack of scientific basis for the apparent therapeutic success. It is not advocated that such useful therapeutic procedures be discarded in favor of an era of "scientific rationalism" such as that in which Bernard Aschner<sup>2</sup> believes us to be "wallowing" at present. Also it is recognized that there is no "royal road" to the science of statistics, so essential to the proper evaluation of scientific data.<sup>3</sup> It is recognized, however, that statistical significance carries with it no endorsement of experimental design, but is merely the verdict of a mathematical operation on whatever tables of data the author of a publication chooses to present, and does not look into the manner in which such data was obtained. It is also thought that many of the studies reported in medical literature contain gross defects in experimental design. Therefore, it is the purpose of this paper to collect under one cover some pertinent facts from several articles in the hope that they will be of aid in the recognition of these defects where and when they exist, and thus aid in avoiding the "post hoc" fallacy in the building of a therapeutic armamentarium.

The preliminary investigations that suggest that an agent might be useful in a certain therapeutic field indicate the course to be followed in more extensive laboratory and clinical investigation of that agent. The experimental design is, of course, dependent upon the type of agent tested and the use

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\*Thesis written while the author was a senior student at the University of Kansas School of Medicine. Dr. Kells is now serving his internship at St. Mary's Hospital, Kansas City, Missouri.



for which it is intended. For example, the experiments carried out on a new antibiotic would be of quite a different nature from those carried out on a new hormone or a vaccine. Due to this variation, no standard procedure can be followed. There are, however, certain principles more or less applicable to all agents which must be followed if the experiment is to be significant. Likewise, in the evaluation of experimental evidence, there are certain criteria to be applied and certain fallacies to be avoided which are applicable in almost all instances. Some of these will be discussed briefly, but since their relative importance cannot be categorically stated, the order of their appearance cannot be interpreted as an indication of this.

Since the first step in the planning of any experimental study is to decide which specific questions are to be answered by the study, I believe that one can do no better than to duplicate the process and determine precisely what questions are answered by the study. The evaluation of pharmacological studies by a question-answer method is in use in the course of pharmacology for senior students at the University of Kansas Medical Center. It is felt that this method offers advantages of clarity and preciseness of definition of content which are not approached by other methods of study.

Of the many important aspects to be considered in the appraisal of studies concerning therapeutic efficacy, probably none is of more fundamental importance than the investigator himself. As has been pointed out,<sup>20</sup> the science of statistics can go no higher than its original source, hence the most adequate and significant of statistical analyses are worthless if based upon inaccurate data gathered through faulty judgment and observations. Except in a few instances, it is seldom known just what qualifications, if any, the investigator possesses. One can look for information regarding the position of the investigator in his particular organization and in the institution to which he is attached. This statement is based upon the assumption that the staffs of reputable medical schools and research institutions will, in all probability, contain well qualified men.

Whether or not the investigator works in the field in which the investigation occurred is also of some importance. If, for instance, the agent under investigation is to be used in the treatment of skin lesions, a dermatologist should obviously be better qualified to make the diagnosis and to judge the results obtained than should an otorhinolaryngologist or even an internist.

The journal in which the article appears may be thought by some to be an index of reliability. However, Ross<sup>4</sup> showed that this is questionable. It is probably superfluous to point out that these above mentioned factors are suggestive only. The

fact that an article is written by the foremost authority in a particular field and published in the most reputable journal does no more to validate that article than does the fact that an article is written by some unknown investigator and published in a more-or-less obscure journal invalidate that article. The final decision rests upon the judgment of the contents of the article, *per se*.

One of the first essentials in appraising any agent, personally or by proxy, is to judge the possibility of the presence of bias—which may take several forms.<sup>20</sup> In the case of studies carried out by, or under the auspices of commercial pharmaceutical houses, bias of a financial nature is understandable. In their haste to market the drug before their competitors do so, they may report on favorable preliminary studies, the results of which may be quite different when full use is made of balanced experimental design. That such studies are published by pharmaceutical houses does not mean that they are not valid, but enjoins caution in evaluation. Also, personal bias is, of necessity, present in almost every experiment due to the nature of the scientific method of (1) hypothesis; (2) observation; (3) weighing of evidence, and (4) conclusion. The presence of hypothesis in the sequence betrays the presence of bias; if the investigator did not have some faith in the hypothesis, chances are the investigation would not have been carried out.

The importance of bias cannot be overestimated. Merrel<sup>15</sup> states, "The difficulty of avoiding unconscious bias is so great that the experimenter is in a peculiarly advantageous position if he can make his judgments unburdened by knowledge of the patient's treatment." The sensitivity of investigations to the presence of bias is not constant, if, by the term bias, it is understood that deliberate falsification of data is not meant. The importance of bias is minimized if exact figures are used in the measurement of data. However, in all cases containing subjective evidence *per se* or those containing the evaluation of borderline objective evidence, it is desirable to eliminate this factor by use of the "blind test," to be discussed further.

The selection of the material used warrants the closest scrutiny, as does the manner in which the material was selected. A study may be of two types regarding the material used, i.e., laboratory studies involving the use of animals or clinical studies involving human beings. If animals are used, some attention should be given to the species employed, as species' difference to drug reaction is well established. For example, in the demonstration of the formation of methemoglobin, either as a toxic or therapeutic reaction, the rat, rabbit, and guinea pig are unsuitable animals. Rodents cannot be used for the demonstration of emetic properties because they

do not vomit, and doses of quinine comparable to therapeutic doses in human beings cause blindness in the dog. Marshall<sup>5</sup> states, "If possible and particularly with extremely toxic drugs, both the monkey and the dog should be included in the species used in toxicity studies." For emphasis he points out that in toxicity studies on the eight amino-quinolines, data obtained in the monkey, but not in other species, were transferable to man. Also, the animals used should have experimentally produced pathological and functional changes comparable to the human disease for which the agent is intended. Regarding this, if possible, production of infection should have been accomplished with the same bacterial strains pathogenic for man.

Should the study concern clinical trials of an agent, the exact method of selection of cases and division into experimental and control groups should be stated. There are two reasons for this. First, since we cannot know all of the possible factors affecting the outcome of drug administration, comparability is usually established by depending upon chance, achieved through a process of random selection, with assignment to alternate groups. This is usually done by use of odd and even hospital or clinic numbers, alternate admissions, flipping a coin, etc. The two groups may then be further subdivided according to age, sex, race, etc., if the investigator believes these factors to be significant as shown by the natural history of the disease entity under investigation. Second, when an experiment is completed and a positive conclusion has been drawn, that conclusion is valid only for material of the kind and condition worked with. For the above reasons, it is necessary that all pertinent specifications of the material used be stated, as well as the exact manner in which division into groups was accomplished. Every specification is important until proven otherwise.

One may well ask, "Just how is it decided which specifications are and which are not important?" The only sure way of so deciding would be to set up separate experiments using each specification as a variable in one experiment. This, however, is impossible, hence three other possible methods may be used, but in so doing one is not treading on such firm ground.

First, through the use of different experimental subjects, many of these specifications are varied. If the results are consistently the same, one may conclude that these many variables are of no consequence. It is not necessary that we know which variables are changed, but only which remain the same.

Second, one may invoke the so-called "principle of inconceivability." In this method one concludes as follows, "It is inconceivable to me that  $m$  speci-

fication could possibly have any effect on  $n$ , the result." This is a device which one uses unconsciously many times daily in the formulation of cause-effect relationships.

Third, one may use other scientific data, determined by separate experiment, as an aid in drawing such conclusions. For example, in the vagotomy operation for peptic ulcer, different patients may undergo many different procedures other than the cutting of the vagus nerve. The hospital may be different, a different surgeon may use a different operative approach under different anesthesia, with either more or less trauma to the viscera, and yet in evaluating such a report anyone with an elementary knowledge of physiology would unhesitatingly ascribe the resulting reduced gastric secretion and motility to the severing of the vagus nerve, and not to the many other variables concerned. This is possible because it has been established by separate studies that the vagus nerve controls gastric motility and secretion.

A few statements concerning the establishment of control groups would seem to be in order. In the first place, designation of one group as "experimental" and the other as a "control" group is quite convenient but not always practical. For instance, if we were to evaluate an article reporting the relative efficacy of sulfadiazine as compared to sulfathiazole in the treatment of pneumonia, we should be hard put as to which we should call the "control" and which the "experimental" group. Also, for medical reasons, controls are not always possible. Certain disease entities which carry a high mortality rate can hardly be left untreated to serve as controls for some untried agent. One must remember that the essential feature in any controlled experiment is simply that there be two or more values or settings of the agent ( $A_1$  and  $A_2$ ) and two or more corresponding sample groups of measurements ( $X_1$  and  $X_2$ ). It does not matter which of the latter we designate as the control. Either may control the other.

There are certain types of "controls" occasionally found in medical literature which are not valid and therefore unacceptable. One is the so-called "historical" control. In this type, a comparison is made with the disease status in the pre-drug days, i. e., "Before this treatment was instituted, only  $m$  per cent recovered whereas with this treatment  $n$  per cent recovered." In such a situation we have no assurance that all other factors have remained the same. Adjuvant therapy may be different, the nature of the disease may have changed,<sup>6</sup> methods of diagnosis may now be more competent, etc.

Another type of unacceptable control is that consisting of patients who refuse prescription. One can think of numerous reasons why this should be so, chief of which is the psychological factor involved.



The difficulty in evaluation of this factor would preclude the use of such groups as a control. For similar reasons studies conducted at different clinics where the personnel differs and the type of therapy may have varied are not acceptable.

Too much emphasis cannot be placed on the necessity of adequate controls when possible. That this factor is often overlooked was well pointed out by Ross<sup>4</sup> who evaluated 100 articles, chosen at random from five leading American journals, and obtained the following results:

No control .....	45%
Inadequate control .....	18%
Well controlled .....	27%
Control impossible .....	10%

Each detail must undergo the closest scrutiny so that we may be certain that comparability was established between control and experimental groups at the beginning of the study and maintained throughout.

Merrel<sup>5</sup> cites a study in which certain agents were to be tested against motion-sickness. In this study two ships comparable in size were to run simultaneous and parallel courses. For administrative reasons it would have been more convenient to use only one preparation and a placebo on each ship. The investigators, however, would not agree to this. When the results were tabulated, it was found that there were significant differences, both drugs and the placebo giving better results on one ship. A detailed search finally revealed this ship to be carrying more ballast than the other, hence the better results were due to the reduced motion. Had the investigators bowed to the wishes of the administrative officers and had not properly controlled the experiment, false claims would certainly have been forthcoming concerning the agent that would have been tested on that ship.

There are two methods of control currently in use, one of which should be demanded in all studies involving the use of subjective observations. These are the simple "placebo" control and the "blind test." Actually, the former is an integral part of the latter, hence it would seem as if a brief discussion of placebos would be in order. First, every therapeutic agent administered, whether or not it possesses recognized pharmacologic actions, is partly placebo. Second, as has been pointed out, the placebo, where practical, should be an integral part of every clinical evaluation of a pharmacologic agent, for it is the only possible way to determine how much of the therapeutic action is due to the drug per se, and how much is due to just giving "a medicine."

The word "placebo" comes from the Latin verb "placere" and it means "I will please." A medical dictionary defines it as "a medicine, given for the purpose of pleasing or humoring the patient, rather

than for its therapeutic effect." While its use is probably as old as the art of medicine itself, Pepper,<sup>7</sup> writing in 1945, stated that he could find not one article devoted solely to the placebo, as that heading was not listed in the card catalogue of the library of the Surgeon General and was also missing from the Cumulative Index. He stated, "The giving of a placebo, when, how, and what, seems to be a function of the physician which, like certain functions of the body, is not mentioned in polite conversation." However, such is no longer the case, and the placebo is rapidly coming to be recognized as a definite and useful entity in the therapeutic armamentarium and experimental procedure.

It was stated above that all therapeutic agents, whether or not they possess recognized pharmacological properties, contain the placebo element. This statement probably needs qualification. Placebos, in general, can be classified into three groups as follows: (1) pure placebos; (2) impure or adulterated placebos; (3) the universal pleasing element.<sup>8</sup>

In reverse order, "the universal pleasing element" is an intangible part of all prescriptions. We cannot, of course, know the exact connotation carried by the words "doctor" or "medicine" to each individual patient, but by and large it appears safe to assume that they have been linked with mysticism and magic since the first drug was given. Hence, the very act of writing a prescription—the manner in which it is written (preferably "extemporaneously and with a flourish"), the fact that it required a doctor to write, the fact that it must be taken to a pharmacist to be filled, its peculiar taste, color, odor, signatura, etc.—all act to reinforce the pharmacological value of the components of the inscription. Again this will be reinforced in direct proportion to the patient's faith in and enthusiasm for the physician.

In the second group we find the impure or adulterated placebos. These are preparations containing one or more elements which *might* have some pharmacological action. This group contains the tonics, plain and fancy, the vitamin preparations, minerals, sedatives, antispasmodics, etc. These are undoubtedly the most widely used of any type of placebo, both intentionally and unintentionally. They are, in most instances, given under the theory that they might help the patient and at least can do him no harm. They are doubly effective. After a few successful trials the physician as well as the patient becomes deluded as to their therapeutic potency, and his mounting enthusiasm reinforces the preparation through the mechanism mentioned in the above paragraph.

In the first group we placed the pure placebo. These are drugs recognized by everyone as possessing no pharmacologic action per se and are designed to deceive only the patient as long as their identity

remains unknown to him. The lactose tablet is a good example. These are at once the most valuable and the least used of all types of placebos. They are the most valuable because they give the physician the opportunity to observe the full power of the chemical agent as a psychotherapeutic device, and undoubtedly the reason that so many physicians continue to administer useless drugs and assign false values to them is that they lack experience with unequivocal placebos in their place. They are least used because those who like to consider themselves "honest" physicians rebel at the idea of administering "worthless drugs" and also because of the danger of being found out by the patient.

That the placebo is a potent therapeutic agent and in its actions can resemble almost any type of drug is well established. Stolte<sup>9</sup> cites the case of a patient who derived more benefit from the placebo than from the agent being tested, and who objected strongly when the placebo was taken from him and the agent substituted. Wolf<sup>10</sup> and Grace et al<sup>11</sup> obtained objective evidence of alteration of drug action by the mental predisposition of the patient at the time of administration. Further evidence is obtained through the evaluation of the success of homeopathy in the light of present day knowledge.

It is to be noted that the placebo acts through the power of suggestion, and therefore is probably not correlated in any way with the intelligence of the patient. Gold<sup>8</sup> cites the case of a physician, in severe congestive heart failure, who refused to take digitalis because he thought he was allergic to it, and yet responded very well when he was unaware that it was being administered.

The possibility of negative suggestibility is not to be overlooked. These patients will claim that the placebo makes them worse. This could prove quite disturbing, and also misleading, in placebo controlled studies of analgesic agents. Furthermore, one must not overlook the possibility of the natural history of the disease entity being treated, and thus assign complaints to a psychoneurotic basis merely because they disappear with placebo therapy when, in reality, the effect is brought about through remission of the disease process.

Having discussed some of the possible actions of the placebo, it is readily apparent why their use should be included in any well controlled pharmacological investigation. Indeed, Schwab and Leigh<sup>12</sup> in setting up criteria for assessment of therapeutic agents would make their use mandatory. Regarding this, they state as follows, "There must be a clear positive placebo response when the drug is substituted by a placebo identical in size, shape and appearance without the knowledge of the patient or relatives." With slight modification, this statement

contains the essence of another control device known as the "blind test."

The "blind test" is a particularly effective device for eliminating bias because it denies to the patient the power of suggestion implied in the administration of therapeutic agents and it denies to the investigator knowledge of the type of treatment, if any, that the patient received. There are several methods by which the principle of the "blind test" can be applied. Generally speaking, they fall into such categories as the dispensing of different drugs and placebos in physically indistinguishable forms and under conditions such that neither the patient nor the investigator is aware of the identity of the agent administered; the assignment of patients to control and experimental groups, the investigator being unaware to which group the patient was assigned although he may have knowledge of the agents undergoing test, etc. Shane<sup>13</sup> states, "It is safe to say that the 'blind test' has constituted a prime factor in the enhancement of the validity of experimental results that might otherwise be open to serious question."

Control observations are necessary from standpoints other than the elimination of bias and the evaluation of subjective data. They are necessary to supply information concerning the natural history of the disease. After reading an article one should never have to ask, "Would the results have been equally as good if the patient had received no treatment whatever?" Such controls also will eliminate the tendency to ascribe spontaneous remissions to therapeutic efficacy. Likewise it is necessary that the subjects should have undergone preliminary control observations. If the associated agents (see below) are to be eliminated and the placebo response obtained, it is necessary that there be alteration of treatment and alteration of treated and "control" subjects.

Concerning the number of cases required if the results are to be meaningful, a statistical analysis must be employed. One can get some idea, of course, of the number of cases needed from consideration of the disease entity investigated. For example, recovery of 60 per cent of 10 cases of rabies or tubercular meningitis would be significant as it is known that these diseases carry a 100 per cent mortality rate if left untreated. However, recovery of 60 per cent of 10 cases of acute coryza or even infectious mononucleosis could hardly be considered significant as these are self-limiting diseases with a recovery rate of 100 per cent. Roughly speaking, the number of cases required will vary directly with the variability in the material on which the measurements are made and the variability of the measured values. It will vary inversely as to extremeness of results, i. e., the more extreme the results the fewer the measurements it will be necessary to make.



Regarding variability of the material, it is obvious that not so many observations will be required if the paired experimental technique is used. By this is meant the making of the  $X_1$  and  $X_2$  measurements on the same subjects and under the same conditions except for variability of the agent, setting and time. Providing the time interval is relatively short, the material will be the same, and thus time becomes an insignificant factor. Variability of material will also be limited if the investigator chooses only certain classes of subjects for experimental material, e.g., 22-year-old males in good health. Regarding variability of results, statistical calculations are involved which, as pointed out, are beyond the scope of this paper.

Establishment of the diagnosis also merits study. The evidence offered should be as objective as possible. The use of EKG, x-ray, photographs, serological and laboratory procedures is desirable and should be included whenever possible. These procedures should also be repeated at intervals as the study progresses, and should include blood levels of the agent, if practical, so that one may correlate the dosage with the therapeutic response obtained. If that is impossible due to the nature of the disease entity, complete case histories should be included so that the reader may judge for himself concerning the validity of the diagnosis and alleged therapeutic response. Mere summaries of such cases are seldom acceptable.

Turning to agent variables in the agent tested, we should make the following reservation: The agent variable has been shown to be casually related to results observed, or has not been so shown, holds only for the agent variable used in the experiment. This reservation is applicable to the dosage of the agents used. It means, for instance, that if a certain effect is produced by dose  $X$  we cannot conclude that we will get twice this effect from a dose  $2X$  or from two single  $X$  doses administered at closer intervals. There are, however, several statistical devices applicable to pharmacological study which may be used and with which one should be familiar.<sup>13</sup> These are (1) the curve of action; (2) the dosage response curve, and (3) the frequency distribution curve.

The curve of action is a graphic representation of the effect of the agent upon some body function, i.e., the effect of a cardiac glucoside on the ventricular rate in auricular fibrillation. From such graphs one can obtain information about onset of effect, time of peak effect, and elimination time of the agent. The procedure is readily adaptable to the production of composite curves of action (one drug—several patients); comparative action curves (one patient—several drugs); and curves of action contrasting the

effect of equal oral and I.V. doses of the same preparation, thus providing information about degree of absorption.

The dosage response curve is defined as a curve in which the magnitude of effect resulting from increasing doses of a drug is plotted against the doses that produced those effects. This procedure is used to provide information regarding the potency of relative doses of drugs possessing similar actions. As such curves are sigmoid in shape (bell shaped) they indicate the dosage range wherein the greatest sensitivity to the agent lies, and where the greatest clinical effect per unit weight of agent may be expected. Quantitative comparisons between drugs are valueless if these factors are disregarded.

The frequency distribution curve constitutes a method whereby wide sampling of the population may be substituted for sharp definitions of effect. By its use one seeks to determine the number of subjects in which any change will be produced by a given dose of drug. The dose of the drug is plotted against the per cent of the total number of patients in whom the drug produced a given variation. With this information available on known agents, comparisons of the potency of unknown preparations are readily made.

With information obtained from the above procedures, one is in a position to judge the dosage plan to be used. While it is not the purpose of this paper to discuss the dosage of drugs, the subject seems important enough to merit comment. Gold<sup>14</sup> states the following: "A large proportion of the failures in drug therapy results not so much from the choice of the wrong drug, but from the use of the correct drug incorrectly."

There are, broadly speaking, two types of dosage plan, the non-cumulative and the cumulative. The non-cumulative plan involves giving a single effective dose, but repeating it at intervals such as will prevent raising the concentration of the agent in the blood and/or the body tissues. With such a method, the results may be cumulative, but the drug is not.

The cumulative plan is just the opposite. The plan involves the giving of a small dose at the beginning and repeating it at such intervals as to build up a concentration in the blood and tissues, adequate to produce the therapeutic effect desired. The latter plan is particularly advantageous with extremely toxic drugs or with drugs the dosage of which is unknown, since the full dose is acquired by steps, each of itself so small as to cause little or no harm or toxicity. Obviously, if a drug is to be used intelligently according to one or another of these plans, one must know when the peak effect of the drug is obtained and something about its time of excretion.

As pointed out above, such information is readily obtainable from the curve of action of the drug.

A few examples may clarify the above points, as well as point out some of the errors made in drug administration through disregarding pharmacological data which is readily available. As an example of the non-cumulative plan of dosage, let us consider the mercurial diuretics as ordinarily administered. One should repeat the dose at such intervals as to cause a progressive loss in weight as this is the particular endpoint of reaction for this drug. One sees it administered at intervals of 24 to 72 hours or longer when, as a matter of fact, it is known that all of the mercury is eliminated from the body within about 24 hours. Thus, if the drug is administered at significantly longer intervals than this, one is allowing the patient to lose ground, so to speak. It can, of course, be pointed out that too rapid dehydration is to be avoided as it leads to fluid and electrolyte imbalance and subsequently to the patient's discomfort. It would seem that a reduction in the single dose of the drug with maintenance of the 24-hour interval is, pharmacologically speaking, more sound.

As an example of the cumulative plan of drug therapy, we will consider the use of quinidine in cases of auricular fibrillation. One often hears of patients who have been taking a fixed dose of 0.2 gm. of the drug three or four times a day over a period of several weeks. Of course, a certain percentage of the cases may get favorable results on such a regime, but failure in others could have been predicted at the end of three or four days. From data readily available, it may be shown that the peak effect of quinidine may be expected within two or three hours following oral administration. The cumulative plan for such a drug would call for six to eight doses a day rather than the three or four so often administered.

If one is to give a drug a therapeutic trial according to the cumulative plan of administration, one should select as the endpoints for such a plan the appearance of either minor toxic symptoms or the desired therapeutic effect and raise the dosage progressively until one or the other makes its appearance. Only if used in this manner can it be said that a drug has been given an adequate therapeutic trial.

There are certain situations, albeit rare, which call for a fixed dosage plan regardless of the indicated needs of the patient, for instance the administration of digitalis for congestive heart failure accompanying active rheumatic fever. In such instances both the minor toxic symptoms and the therapeutic response may be masked by the disease entity, and, having no endpoints available for cumulative therapy, troublesome toxic symptoms may occur if

one attempts to increase the dosage of the drug according to the needs of the patient. In such instances, it is probably best to select the highest dose of digitalis which is calculated to give the maximum therapeutic effect with a minimum of side reactions and administer it on a fixed schedule regardless of the clinically indicated needs of the patient.

Having considered some aspects concerning the agent and its use, we can now turn to the results obtained and their measurement. Schwab and Leigh<sup>12</sup> state, "A drug that is successful in therapy should improve not only the subjective symptoms of the patient but must in some way show evidence of objective positive results that can be clearly demonstrated and recorded. These objective signs should be clear enough to be demonstrable to disinterested observers and, if possible, be subject to some form of quantitation so that comparative figures and charts can be prepared."

X-rays, EKG's, and laboratory data can usually be obtained as objective evidence of improvement, or such simple measures as handwriting specimens, goniometer measurements, or peripheral visual field may be applicable. As mentioned above, if possible, blood levels of the agent should be determined at frequent intervals during the study in order that these may be correlated with the therapeutic response observed. Caution is to be observed, however, in the interpretation of these criteria too liberally. For example, the EKG may be used to measure digitalis effect. The frequency distribution curve discussed above is obtained by observing T-wave changes in response to digitalis dosage in a number of patients, and methods have been described utilizing this principle for the bioassay of digitalis preparations in human beings.<sup>15</sup>

While these are valid methods for the assay of drugs for potency, *it must be emphasized that such measurements cannot be used as therapeutic criteria, as it is well known that there may be no relationship between the effect of digitalis on the T-wave, and its effect in heart failure.* Some patients may show negligible changes in the T-wave with doses of the drug sufficient to control congestive failure, whereas others may show advanced T-wave changes with doses of the drug having little or no effect upon congestive heart failure.

Concerning the reporting of subjective symptoms, two methods are in use. The oldest and most commonly employed is known as the "interval evaluation" method. In this method, the patient reports on the progress of therapy at each return visit. Two disadvantages of this method are immediately apparent. First, the investigator has the opportunity of, consciously or unconsciously, asking leading questions which may influence the patient's answers,



and second, the interval between visits may be so long that the patient may become confused concerning his daily status.

The second method was introduced by Greiner et al<sup>16</sup> in a well controlled study on the chest pain of angina of effort. It is known as the "daily report card" method and is readily adaptable to almost any type of clinical investigation. It offers freedom from distortion by the many factors affecting the statements of patients concerning subjective sensations, and supplies data readily accessible to statistical analysis. It consists of a card on which four questions are asked concerning how the patient felt each day, and all that is required of the patient is to mark an X in the appropriate column.

In the comparison of the use of this method with the interval evaluation method, different answers were forthcoming. The "daily report card" method suggested the test agent to be equal to the placebo for the relief of anginal pain, while the interval evaluation method suggested the placebo to be superior to the test agent. As it was unlikely that the test agent increased the incidence or severity of anginal pain, the authors conclude as follows, "It is also safe to assume that the 'interval evaluation' method has nothing like the precision of the 'daily report card' method when applied to the observations on the same sample of 39 patients treated during a period of approximately three months."

Having considered some aspects concerning the control, agent, and the results reported, the next step may be the asking of a question similar to the following, "Are the results due to (a) the agent, (b) an associated agent, or (c) chance?" Concerning (a) we must not draw such conclusions until we have answered (b) and (c) in the negative.

An associated agent may be defined as a change in value of some variable ( $a'$ ) other than the agent variable A, that accompanies change in the agent variable. Thus the presence of an associated agent ( $a'$ ) may cast some doubt as to the validity of the cause-effect relationship between A and X since it also varies along with A.

For sake of illustration, suppose we were to test an ephedrine-like compound for its hypertensive effect. If we gave the dose A<sub>1</sub> by injection and the dose A<sub>2</sub> orally, we should be introducing an associated agent, the pain of injection. If, however, both doses A<sub>1</sub> and A<sub>2</sub> are given by injection the pain becomes a constant rather than a variable and thus ceases to be an associated agent.

Some of the common associated agents likely to be present in any study are as follows: time, age, sex, race, use of different instruments and/or techniques in gathering data, differences in the diets, sleep habits, etc., of the experimental subjects, their fear or trust in the investigator, etc. It will readily be

seen that associated agents may act as inhibitors as well as adjuvants and thus may mask the effects of the agent A as well as enhance the effects.

From the standpoint of the ideal experiment, the presence of an associated agent is to be avoided, if possible. However, one must not conclude, practically speaking, that this is always the case. First, turning to the vagotomy operations alluded to above, it is not always possible to eliminate associated agents and in therapeutic use they will undoubtedly be present. Second, variability in the material carries with it more universality in conclusion, an aspect of the associated agent which cannot be termed undesirable. Nor must we conclude that an experiment is worthless merely because it contains a persistent associated agent. The results are then regarded as a composite of the agent A and the associated agent A'. Indeed it is not inconceivable that the sole value of an agent may lie in its ability to invoke the action of desirable associated agents.

There are two questions to be asked concerning the associated agent in evaluating any study. First, is an associated agent present, and second, if so, did it exert any effect? By definition, if an associated agent is present there must be a change in something besides the agent variable. To rule out the presence of an associated agent, one must be sure that with the sole exception in the setting of the agent variable there is no systematic difference between the two series of measurements or observations, or even preponderance of one series over the other in respect to:

- (a) Setting of the experiment in time and place.
- (b) Material worked on—marked difference in age, sex, physiological condition, nutrition, state of activity, heredity, emotional condition, etc.
- (c) Handling of the material—apparatus, techniques, sequence and procedures, worker personnel, emotional attitude of workers, etc.

The method used to achieve the conditions stated above may be stated in three ways, as follows:

- (a) Measurements should not fall into regularity of sequence.
- (b) Scramble the sequence of values or settings of the agent variable.
- (c) Procedures of X<sub>1</sub> and X<sub>2</sub> should be carried in parallel and switched from one to another at random.

In the elimination of associated agents there is one type which merits separate mention. The experiment should be scrutinized for trends which occur in many materials and which may have significant influence on the values obtained. A brief example will serve to clarify this point. Suppose we were evaluating an experiment involving the height of contractions in frog leg muscles in response to electrical stimuli of varying strengths. As the strength

of the stimulus is increased, the height of the contraction would increase up to the point of maximum contraction, but as the muscle is kept longer without its blood supply, it shows a progressive loss in ability to contract. Such a trend could, in some experiments, neutralize the increase in height of contraction as the strength of the stimulus is increased, and thus mask a causal relationship to both the "experimental" and "control" groups.

In connection with the associated agent, the use of adjuvant therapy would seem to merit comment. In a recent article<sup>17</sup> purporting to evaluate the use of two biological materials in the treatment of chronically infected wounds, antibiotic and/or surgical treatment were employed in all of the cases cited, either during or immediately prior to the application of the test agents. No figures on similar cases treated either by antibiotics or surgical treatment alone were given for comparison, hence the justification for the conclusions drawn was anything but evident.

Regarding the use of adjuvant therapy, Schwab and Leigh<sup>12</sup> state, "It (the agent) should be specific in its action alone, and not in any way dependent on the adjuvant activity of other compounds administered at the same time. After its effect has been clearly demonstrated, adding other drugs to augment its effect or neutralize side reactions is then permissible." While, if handled in this manner, we should know more about the efficacy of the agent, it is seen that not all situations lend themselves readily to such management. The chronic infections in the study cited above constitute such an example, as one can hardly leave them untreated, for obvious reasons. From the discussion of associated agents, it will be seen that it is permissible, if necessary, to superimpose the effects of the test agent upon those of the prevailing therapy, providing that both the experimental and the control groups receive the current method of therapy. In this manner, the interests of the patient are protected, and an associated agent has not been introduced into the experiment.

Concerning (c), the determination of the operation of chance in any cause-effect relationship is a statistical procedure. However, depending upon the situation in question, one can, by exercising a little common sense, determine with some accuracy whether or not chance played any significant part in obtaining the results reported.

In the evaluation of any experimental study, the efficacy of the agent cannot be considered independently of its toxicity, as the two are inseparable.<sup>18</sup> The toxicity of the drug must be weighed against its therapeutic benefits and against the severity of the disease entity for which it is to be prescribed. Thus a drug which is potentially toxic and which

possesses only a minor therapeutic action may be considered too toxic to use in a minor condition, whereas a drug with equal or greater toxic potentialities and possessing significant therapeutic efficacy may be considered safe to use, providing the severity of the disease warrants its use. Since the production of major toxic effects with experimental drugs is not permissible in human beings, most of the toxicity studies published are carried out upon experimental animals.

In addition to the consideration of species difference to drug action already mentioned, one must also consider the dosage plan used in such studies. Marshall<sup>5</sup> states, "A determination of the acute toxicity of the drug in animals (the toxicity resulting from a single dose) may give no information of value where one expects to give more than one dose of drug a day for several days in the clinical trials." He points out that quinine is more toxic than quinacrine when given in a single dose, but the reverse is true when administered several times a day over a period of several days.

Van Winkle et al<sup>19</sup> outlined the following program which they feel should be carried out in the toxicity studies of any agent.

A. Acute toxicity. Dosage response curves in three or more species; objective symptoms; statistical calculations for comparative studies; simultaneous comparative determinations of other substances; variation of toxicity with methods of administration.

B. Subacute toxicity. Large daily doses to one or more species for six to 12 weeks; microscopic pathology.

C. Chronic toxicity. Three or more species; at least one species for the life of the animal; several dosage levels graduated to produce from no effect up to pronounced lesions, and possibly shortening of the life span; microscopic pathology; effects on voluntary activity; running or other performance as evidence of more subtle functional changes.

D. Local effects. Sensitization; skin irritation; mucous membrane irritation; photosensitization.

E. Special studies. Reproduction; distribution and storage; effect of diet; effect of environment; kidney and liver function tests.

It may seem that such a program is unduly demanding, but it is to be remembered that human life may be at stake.

Such a program brings up the duration of the study. Not only must it be of sufficient duration so that inherent toxicity may become manifest, but it must also be sufficient to demonstrate any therapeutic relapses which may occur in a time sufficiently short to nullify the beneficial results of a therapeutic course of the agent.

Finally, in the evaluation of therapeutic studies, one should always compare the agent with the



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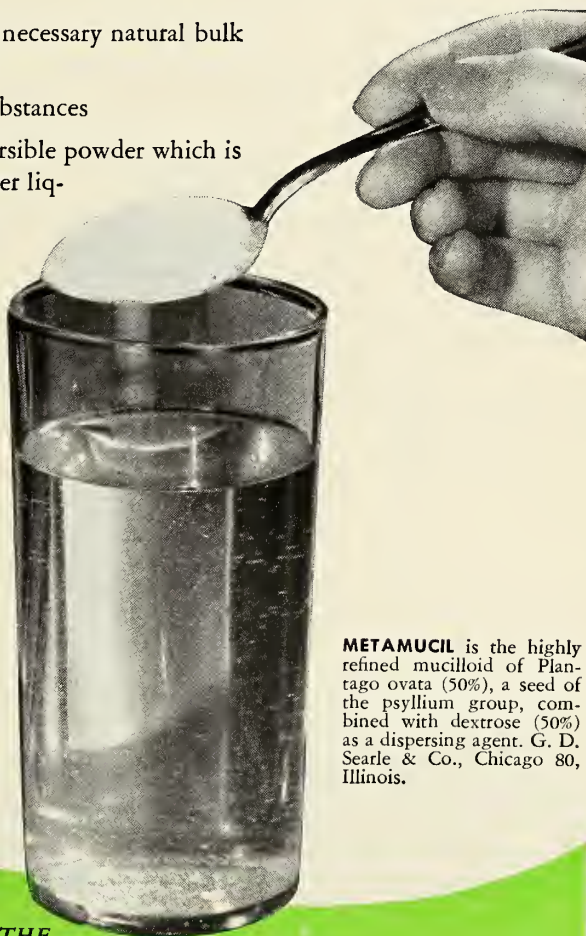
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existing therapy in respect to (a) potency; (b) toxicity; (c) occurrence of side reactions; (d) duration of therapy; (e) ease of administration, etc.<sup>20</sup> Remember that:

(a) Regarding potency, a 100 per cent increase in potency means nothing if a proportional increase in weaker existing agents is possible, unless it also involves freedom from side reactions, shorter duration of therapy, less expense, etc.

(b) Regarding toxicity, it is important only if the margin of safety of the newer preparation is materially greater. If the toxic dose of the existing drug is high, then there will probably be little advantage to changing in this respect.

(c) Regarding side actions, the freedom of the newer agent from side reactions must be significant in kind and degree to be pertinent.

(d) These must also be significant in degree.

(e) Regarding cost, the introduction of a new drug seldom has any material effect upon economics.

Lastly, one should always ask the question, "Is there sufficient reason for trying the agent reported upon, or are present agents equally as satisfactory?"

An attempt has been made to point out a few of the factors to be considered in the evaluation of medical literature. They are common knowledge and are used daily by many who, in the study of medicine and its allied sciences, are required to read a varying portion of the vast amount of literature published on these subjects. No claim is made as to the adequacy of coverage of such a broad field with its unlimited possibilities. The statistical approach has been deliberately ignored because the writer, like many medical students, lacks the necessary knowledge to handle data statistically.

The appearance of large numbers of inadequately controlled and questionably valuable articles in medical literature is *prima facie* evidence of the universal lack of emphasis on the subjects of the Logic of Experimental Design and Statistical Significance in the curriculum of the modern medical school. It is not advocated that the student be "spoon-fed" to the point of crowding another course into an already over-crowded curriculum, but it is advocated that the importance of these subjects be emphasized early in the four-year course of study. It is suggested that great service could be rendered if some competent person were to write, in language which even the slowest student in the class could understand, a small syllabus, covering the essentials of these topics. Perhaps such a piece of work already exists, and if so, it is felt that it should be put on a required reading list for all students.

#### Summary

In summary the following list of questions is submitted. It is thought that if these are kept in

mind while evaluating articles pertaining to therapeutic efficacy, the reader will be less likely to fall into many traps that await the unwary between the covers of the medical journals reposing upon the library shelves.

1. What is the purpose of the study, and what questions does it answer pertaining to the agent?

2. Is the author qualified in the field in which the investigation was carried out?

3. Is there any reason to suspect the presence of bias?

4. Is the study controlled and, if not, does its nature preclude the use of controls?

5. Is the exact manner in which the material was selected and divided into "experimental" and "control" groups stated? Are the pertinent specifications of each group given?

6. Insofar as can be determined, were the "control" and "experimental" groups comparable at the beginning of the study, and was this comparability maintained?

7. Did both the "experimental" and "control" groups undergo a preliminary period of observation in order that base-lines could be established?

8. Is objective evidence offered to substantiate the diagnosis in all cases? If not, are complete case histories included as evidence?

9. What criteria are used to establish therapeutic efficacy? Is objective evidence of same offered?

10. In studies utilizing subjective evidence, were either "blind test" or "placebo" controls used?

11. Was there alteration of treatment with placebo and agent between the "experimental" and "control" groups?

12. Does the agent exhibit a clear-cut positive "placebo" response?

13. In studies involving the use of laboratory animals, which and how many species were used? Were the results the same in all species? Could species difference to drug action have affected the results?

14. Did the animals have experimentally produced physiological and pathological lesions similar to the disease for which the agent is advocated?

15. In laboratory studies dealing with infection, were these produced with the same bacterial strains constituting the etiological agent in human disease?

16. Were the results measured indirectly by instrumental means, and if so are these applicable as therapeutic criteria?

17. Are there associated agents present and, if so, did they exert an effect?

18. Are any trends present in the material or brought about through experimental design which may affect the results?

19. Was adjuvant therapy necessary to produce



# 50 and Four

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the results? If so, of what type was it, and did both the "control" and "experimental" groups receive it?

20. What is the mode of action of the agent? Are they desirable pharmacodynamic actions, or the results of some chance undesirable side reaction of the drug?

21. Are data on the absorption, distribution, excretion and detoxification of the drug known?

22. What toxic effects or undesirable side reactions were noted during the study and how were these handled?

23. Was the trial of sufficient duration in respect to (a) the development of chronic toxic reactions; (b) occurrence of therapeutic relapse; (c) attainment of beneficial effects of the agent?

24. Are blood levels of the agent and other pertinent information recorded so that these may be correlated with the benefits obtained?

25. What is the therapeutic index of the agent; ratio of effective dose to the toxic dose, E.D.<sub>50</sub>/L.D.<sub>50</sub>?

26. How does the agent compare with existing therapy in respect to (a) potency, (b) toxicity, (c) side reactions, (d) duration of therapy, (e) ease of administration, (f) cost, etc.?

27. What are the indications and contraindications for the use of the agent?

28. Was complete cure obtainable or are the results palliative?

29. Are the results constant and reproducible?

30. Were the results of more than one study reported? Do these agree?

31. Is there sufficient indication for trying the new agent or are present ones satisfactory? Remember, your therapeutic armamentarium should be as small as possible and still be adequate for your needs.

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"It has been correctly stated that socialism is communism on a slow train. Socialism performs its totalitarian operations under the anesthetic of 'democratic' terminology while communism draws the same blood visibly, violently and with an open profession of its complete and unrestrained dictatorship . . .

"In 1936, Mr. John Strachey wrote in his 'Theory and Practice of Socialism': 'It is impossible to establish communism as the immediate successor to capitalism. It is, accordingly, proposed to establish socialism as something which we can put in the place of our present decaying capitalism. Hence, communists work for the establishment of socialism as a necessary transition stage on the road to communism.'

"At this writing, Mr. Strachey is War Minister in the Socialist government of Great Britain.

"Unless constitutional limitations upon the spending powers of Congress are effectively and speedily established, all other constitutional limitations will soon be swept aside in our constantly accelerated drive toward centralized socialism. Money is power and, when the materialistic concept controls, unlimited money is unlimited power . . .

"Today, big and complicated government has a hand in everybody's business and another in every person's pocket. These hands are moved by relatively obscure people tucked away here and there throughout the fathomless maze of government's bulging bureaucracy."—*Clarence Manion in The Key to Peace.*

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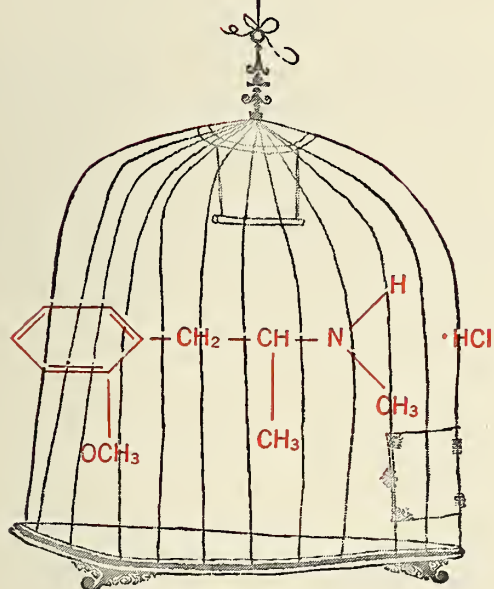
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### The A.M.A. Atlantic City Convention

Atlantic City is probably the greatest convention city in the world. Hotels are comfortable and are of all types. The eight mile board walk is famous the world over, with shops of every description along the ocean beach.

Convention Hall, the largest in the world, was filled. Scientific exhibits, which completely filled the lower level, were judged carefully and prizes awarded. There was, as always, a liberal education in all specialties. Any physician could have profited by spending two whole days viewing and reading the material there presented. These exhibits were classified into the specialties, and maps were available to direct one easily to his chosen field. One hears the criticism that it is all too large; but without size, variety would be lacking. The programs contain all the maps and instructions needed so that one may easily find the material in which he has the highest interest.

The commercial exhibit filled the main floor completely, and there again one found all of the newest adjuncts displayed, not only for medicine and surgery, but also for all of the ancillary professions. Actually, there were hundreds of them; and in one corner, Coca Cola was distributed free.

On a lower level at one side, color televised surgery, as well as clinics, progressed all day very nearly according to schedule. These were presented through 24 sets furnished by Smith, Kline and French Laboratories. Parenthetically, a televised Caesarean section caused 10 women to faint. There was no time when that large space turned away people who were eligible to enter, although the curious were kept out by police.

The House of Delegates is now composed of 201 seats. Two hundred were in attendance. The technique of operation of this most democratic organization has proved most successful through 100 years of trial and error. Any state through a delegate or a delegate himself may present a resolution which typists are ready to prepare. The chair recognizes the delegate whose name and state appears on the resolution, and the resolution is presented to the House of Delegates. Then it is referred to an appropriate committee for hearing where its proponent may amplify its details. The committee brings it back to the House with its recommendation for final action of the House.

The most important items emphasized by the trustees and the delegates, in my opinion, are:

1. Continued effort in increased enrollment and broadened benefits of voluntary medical and hospital prepaid insurance.
2. Improved public relations with emphasis on

24-hour emergency medical care for all communities.

3. Grievance committees to correct misunderstandings between physician and patient.

4. Emphasis on joining the World Medical Association.

The World Medical Association is one way to promote international understanding. Certainly medical science never has or never should know national barriers. The dues are \$10 a year, and Americans must carry the heavier financial burden because they are the only nation sufficiently economically stable to do so.

The only other important item which I shall mention is the National Medical Educational Fund. We are unified in our fight against socialized medicine. We are certain that the social planners are tireless in trying in every possible way to creep in through all avenues. They have been abetted somewhat by the lowered return from endowments supporting much of American medical education. We cannot fight socialization of medicine and allow the very fountainheads of medical learning to receive federal aid. We are not naive enough to believe that it is possible to receive federal money without directives. We, therefore, by every moral obligation, by our debt to medical education for giving us our opportunity to serve the sick, because of our fight against state socialism, should contribute to this fund. It is deductible, and much or little, we should give—National Medical Educational Fund, care of A.M.A., will suffice. Let us show what Kansas can do to meet this national medical obligation. As you know, last December the American Medical Association contributed one-half million dollars to start this fund and substantial additions have been made by companies and individuals. This is an opportunity to demonstrate in a substantial way our belief in the American way of life.

It seems to those of us who have seriously considered this matter that in our donation budgets, next to our churches, this national medical educational fund deserves first place. There will be no personal solicitation, so the initiative must rest on each individual.

It is both an honor and a real responsibility to represent Kansas at the delegates' meeting. Both Dr. John M. Porter and I try to do so with dignity and intelligence. We welcome suggestions, not only from the Council and delegates of our democratic organizations, but also from any individual member who has a constructive suggestion.

L. S. NELSON, M.D.

Delegate from Kansas.



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## THE KANSAS PRESS LOOKS AT MEDICINE

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### No Shortage of Doctors

In their frantic propaganda campaign to induce the American people to fall for the socialized medicine scheme fostered by the Fair Deal administration, the quacks involved in the crusade are spreading a false idea of the present medical care in the United States. The Pied Pipers tootling for "medicine by government only" paint a dismal picture, one which does not stand up under close scrutiny. They blame the American Medical Association as the "one big obstacle in the path of Congressional efforts to meet the alleged doctor shortage with federal aid to medical education."

Writing in the June issue of Reader's Digest, Paul de Kruif debunks the propaganda put out mainly by the Federal Security Agency in Washington. One of the talking points these Socialists use is that over 30 years the number of doctors has remained stationary, although the population has increased a great deal. The Reader's Digest writer asks the pertinent question,

"What do you mean by doctors?"

In 1920 there was one doctor for every 729 people. In 1950 the figure was one doctor for every 730 people. But what kind of doctors did we have in those days? Paul De Kruif points out that many thousands of them were graduated from diploma-mill medical schools where any man with money could get his M.D. in a couple of years. Any without even seeing a sick person. Those rotten medical colleges have gone out of business. Medical students no longer get degrees for dollars. Graduates from accredited schools today are equivalent to the opening of 15 new medical institutions. Quoting from the article:

"Actually, since 1930 the number of doctors in the U. S. A. has been increasing proportionately faster than the general population. What is our situation compared to other lands? The United States has more doctors per total population than any county in the world, excepting Israel, overcrowded with refugee doctors from Europe.

"Can we judge the over-all need for doctors by simply counting doctors' noses? That's the yardstick used by Washington politicians. It's fishy. In World War II, 40 per cent of our doctors were called into the armed services, leaving 60 per cent of our M.D.'s to guard the lives of 91 per cent of the population. What happened? During the war the nation's health kept on improving, death rates sinking, life expectancy rising.

"The fortunate fact is that one modern doctor can do what 10 couldn't do at all 30 years ago. In those days doctors ran themselves ragged treating diphtheria; immunization has wiped out that drudgery. Inoculations and new wonder drugs have enormously cut down the hours doctors used to spend at bedsides of children sick with whooping cough, measles, mastoids and other childhood ailments. Not long ago pneumonia meant weeks in hospital and day-and-night attendance by doctors. Antibiotics have reduced this killer to a minor illness."

The experience in Kansas is cited to show the fallacy of the propaganda designed to arouse public sentiment for socialized medicine. In the past two years 67 physicians have come to locate in towns of 2,500 or less. Dean Franklin Murphy, of the University of Kansas School of Medicine, reports that a substantial number of these were attracted by the new community technique of building offices and clinics for their doctors.

By such methods local shortages of doctors can be and are being relieved. And at present there is no serious national shortage. Yet from the Federal Security Agency comes a clamor that there will be such a shortage by 1960 unless medical schools increase their output of doctors by 50 to 100 per cent. It isn't true, of course, and the propagandists know it is misleading and false. But so intent are they upon steering the United States down the same path to socialism that has wrecked Britain's medical-health program, they stoop to deception in an effort to achieve their nefarious goals.

Presumably these Socialist-minded savants have taken Adolph Hitler's slogan of "the bigger the lie, the more people believe it."—*Topeka Daily Capital*, July 1, 1951.

\* \* \*

### Geese and Ganders

Your editorial on socialization of medicine was a subtle method of conditioning propaganda. "Eventually, why not now"—it is fortunate for you that we professional men don't treat you in a similar manner when you come into our offices. What if we say, "Eventually you will die." "I'm sorry." "Next patient please."

Have you ever given it a thought that you too are eligible for socialization. Why not? Every point you can make for my profession to be socialized I can make for yours.

You point out that England will never go back to private medicine—of course not. It has become a political issue. Just because they now have it and won't go back to private medicine does not say it's desirable. We probably won't be without a big national debt either, but that doesn't make it a good thing.



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What's good for the goose may be good for the gander—I should be socialized—OK, so should you.—*J. O. Schrag, D.D.S., McPherson, in Hutchinson News-Herald, July 15, 1951.*

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## ANNOUNCEMENTS

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The American Congress of Physical Medicine will hold its 29th annual scientific and clinical session September 4-8, inclusive, at the Shirley-Savoy Hotel, Denver. Full information may be obtained from the Congress, 30 North Michigan Avenue, Chicago 2, Illinois.

\* \* \*

The 37th annual clinical congress of the American College of Surgeons will be held in San Francisco, November 5 to 9. A feature of the meeting will be color telecasts of surgical procedures from Letterman Army Hospital. The 30th annual Hospital Standardization Conference will be held as a part of the congress. Complete information may be secured from the College, 40 East Erie Street, Chicago 11, Illinois.

\* \* \*

The American Heart Association announces that applications are now being accepted for research fellowships in cardiovascular and related fields, the studies to begin in July 1952. Applications may be submitted up to September 15 of this year. The address of the association is 1775 Broadway, New York 19, New York.

\* \* \*

The trustees of the Caleb Fiske Fund of the Rhode Island Medical Society announce that the subject for the prize dissertation of 1951 is "The Present Status of Adreno-Cortical Hormone Therapy—Its Uses and Limitations." A prize of \$200 will be awarded the winner. The closing date for submitting manuscripts is December 2, 1951. Copy must be typewritten, double spaced, and should not exceed 10,000 words. Details may be secured from the Rhode Island Medical Society, 106 Francis Street, Providence 3, Rhode Island.

\* \* \*

The 16th annual assembly of the United States chapter of the International College of Surgeons will be held in Chicago, September 10 through 13, with headquarters at the Palmer House. In addition to the general assembly, scientific sessions will be held by all specialty sections of the United States chapter. On the evening of September 13 Senator Estes Kefauver will speak on "The America of Tomorrow." Hotel reservations may be arranged by writing the Housing Division, Chicago Convention Bureau, 33 North LaSalle Street, Chicago 2, Illinois.

The Mississippi Valley Medical Society will hold its 16th annual meeting at the Pere Marquette Hotel, Peoria, Illinois, September 19-21. No registration fee will be charged, and all ethical physicians are invited to attend. Programs may be obtained from Dr. Harold Swanberg, 209-224 W.C.U. Building, Quincy, Illinois.

The American Medical Writers' Association will hold its 8th annual meeting on September 19 at the same hotel. Among the speakers are Dr. Ralph H. Major of the University of Kansas School of Medicine, Dr. Austin Smith, editor of the Journal of the A.M.A., and Miss Marguerite Stadelhofer of the C. V. Mosby Company, medical publishers. There will be no registration fee.

\* \* \*

The third annual meeting of the Southwestern Surgical Congress will be held at the Hotel Jefferson, St. Louis, September 24 through September 26. Reservations may be secured by writing direct to the hotel. Registration will be at noon on Sunday, September 23, and at 8:00 a.m. on each succeeding day. There will be a \$10 registration fee for non-members of the Congress, only.

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### New Drug for Use in Surgery

A new drug called Mytolon, which makes deep anesthesia unnecessary when muscles must be relaxed in the course of surgery, has been developed and found clinically useful in surgical operations. It has been proved more potent and safer than natural curare.

A report on the development of the drug was presented to the New York Academy of Sciences Conference on Curare and Anti-Curare Agents in New York recently. Chemically, Mytolon is 2,5-bis-(3 diethylaminopropylamino)-benzoquinone-bis-benzylchloride. It is a red crystalline solid.

The drug is administered intravenously in conjunction with the anesthetic. Molecules of it blanket the receptor sites of all the voluntary muscles in the body, blocking nerve impulses and producing a relaxing effect that lasts for 15 to 20 minutes. In more than 400 surgical cases, it has proven especially effective for operations of long duration.

Most significant advantages of the new synthetic drug over the natural curare alkaloid compound, known as d-Tubocurarine, are that Mytolon does not produce such side-effects as paralysis of the autonomic ganglia, bronchial spasms, histamine release, depressing effect on the heart, and falling blood pressure or shock.

Mytolon will shortly be introduced nationally by Winthrop-Stearns, Inc. It will be made available to surgeons in five cc. ampuls containing three mg. per cc.



A SMOOTHER READJUSTMENT of the internal environment of the climacteric patient may be anticipated through hormonal replacement (with conjugated estrogens, equine).  
*Glass, S. J., and Rosenblum, G.: J. Clin. Endocrinol. 3:95, 1943.*



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## BOOK REVIEWS

*Spatial Vector Electrocardiography.* By Robert P. Grant and E. Harvey Estes, Jr., Published by the Blakiston Company, Philadelphia. 149 pages, 41 figures. Price \$4.50.

The authors have approached electrocardiography by vector analysis. The principle is based on the premise that the events of cardiac depolarization and repolarization produce a force or vector. The EKG leads are merely the graphic representation of a part of that force. A method is clearly outlined to calculate the spatial direction of ventricular depolarization (QRS vector) and the vector of ventricular repolarization (T vector).

This can be determined by simple inspection of any EKG of three standard limb leads, AVR, AVL, AVF, and 6V leads. The QRS vector and T vector form an angle called the QRST angle. By knowing the QRST angle and direction, the pattern of any EKG lead can be predicted. In cardiac disease the QRST angle changes. Myocardial infarctions and other clinical conditions are explained on the basis of vector analysis.

The chief advantage of the approach used by the authors is its simplicity. It provides a basis for understanding electrocardiography without requiring the reader to memorize patterns. For the clinician who has had wide experience in interpreting empiric patterns, it provides an explanation for the many variations he has come to recognize as abnormal records.—L.E.L.

\* \* \*

*Handbook of Nutrition. Second edition. Prepared under the auspices of the Council on Foods and Nutrition of the A.M.A. Published by the Blakiston Company, Philadelphia. 717 pages, 7 charts, 28 tables, 35 figures. Price \$4.50.*

The book is a revision of a previous edition published in 1943. The greater part of it is completely rewritten. It is a compilation of articles on nutrition and metabolism prepared by specialists in the different fields. The authors include specialists in metabolism, biochemistry, surgery, medicine, pediatrics, physiology, agriculture and public health.

The papers are grouped into four parts: (1) individual nutrients, (2) nutritional needs, (3) nutritional deficiencies, and (4) foods and their nutritional qualities.

The first part is a summary of the latest knowledge on metabolism of protein, fat, carbohydrate, minerals, and vitamins. There is a discussion in each chapter of the latest research and controversial issues.

Part two deals with nutritional needs of persons of different ages and different states of health. There is a chapter on nutritional needs in illness and disease. Tables are included of recommended food requirements published by the Food and Nutrition Board of the National Research Council. The authors point out the need for further research to establish food requirements for optimum health.

Section three covers inter-relationship of nutrients. The relation of certain vitamins to carbohydrate, protein and fat metabolism, the inhibitive action of some nutrients to others, the relation of vitamins and minerals to each other, are some of the "balances" considered. There is a complete chapter devoted to fluid therapy and another to caloric undernutrition. Results of studies on starvation made during the war and afterward are presented. Symptoms of deficiency states resulting from imbalance of vitamins and minerals are discussed together with recommended therapy.

Part four deals with studies in the adequacy of American diets. Variations in composition of the same foods are pointed out. Ensuing agricultural and marketing problems are discussed. The use of supplements to improve the quality of staple foods is recommended in order to insure a better diet for the average citizen.

The handbook is a comprehensive review of the present knowledge in the field of human nutrition. It is complete enough to be of practical value as a reference to the practicing physician.—R.H.

### Acthar Council Accepted

Acthar, Armour Laboratories brand of ACTH, has been accepted by the Council on Pharmacy and Chemistry of the A.M.A. The product, supplied in 10, 15, 25 and 40 milligram vials, is the first ACTH product so accepted.

In spite of numerous rumors to the contrary, there is no shortage of Acthar. All orders are being filled immediately.

A film presented by the Armour company at the June meeting of the A.M.A. "Therapeutic Uses of ACTH in Human Diseases," was one of the six most popular movies shown at the session, according to the A.M.A.'s rating on the basis of attendance.

### Golden Belt Society Meets

A meeting of the Golden Belt Medical Society, scheduled for Manhattan on July 12, was held at Topeka on that date because of flood conditions. The scientific program was on the subject of the clinical application of radioactive isotopes, with two speakers taking part, Dr. Kenneth Corrigan of Harper Hospital, Detroit, Michigan, and Dr. Frank Hoecker, Stormont-Vail Hospital, Topeka.





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## ABSTRACTS FROM CURRENT LITERATURE

### Venous Thrombosis

*A New Concept of Venous Thrombosis.* By A. J. Quick, *Surg., Gyn. and Obs.*, 91:296-300, Sept. 1950.

The problem of diagnosis and prevention of venous thrombosis has not been successfully solved. Until means are found to recognize the thrombotic tendency before the signs of thrombophlebitis appear, prophylactic measures against pulmonary embolism are left largely to chance.

Plasma furnishes all but one of the primary clotting factors, which are thromboplastinogen, calcium, prothrombin and the labile factor (the latter is also known as factor V and ac-globulin). No formation of thrombin takes place until free thromboplastin becomes available. For this to occur, platelets must disintegrate since they contain the activator of thromboplastinogen. Without platelets no coagulation occurs. As soon as thrombin is formed, it enzymatically converts fibrinogen to fibrin, and, equally important, it acts on the platelets, making them labile, thereby causing them to disintegrate. As a result, they liberate additional activator, and more thromboplastinogen is converted to the reactive state; therefore, more thrombin results and an autocatalytic reaction is initiated.

Thrombin, because of its action on platelets, has the power to set off a chain reaction that potentially could coagulate all the fibrinogen and convert all of the circulating blood into a solid clot.

Investigators have found that in the clotting of blood in a test tube, only a minute amount of prothrombin is converted to thrombin. Due to the enormous surface of the fibrin reticulum in the clot, the thrombin is promptly removed by adsorption; consequently, the chain reaction cannot be initiated. Only when the intimate contact of serum with the fibrin surface is destroyed, either mechanically by centrifugation or physiologically by clot retraction, is the thrombinogenic reaction allowed to go rapidly to completion.

In the new theory of hemostasis, it is logical to postulate that a thrombus begins as a clumping of platelets. Even minor disturbance, however, may alter the physio-chemical behavior of the endothelial lining and permit the adherence and agglutination of platelets. As the platelets undergo lysis, thrombin is produced and a reticulum of fibrin enmeshing the cellular elements of the blood is formed. The initial or primary clot undergoes retraction and expresses a serum rich in nascent thrombin. If the circulation is rapid the serum is promptly washed away and the thrombus fails to propagate. When the circulation is sluggish, the extruded serum causes the clotting

of blood about the thrombus and a new clot is built on the old thrombus. It in turn retracts and fresh serum brings about an additional extension of the thrombus. Due to the flow of blood, the growth of the clot is principally at the tip and in the direction of the stream. Not only does the retraction explain why the thrombus propagates itself, but it clearly accounts for the common observation that the clot may be entirely unattached to the walls of the vessel except at its locus of origin.

Thus, there are strong theoretical reasons why clot retraction is the important factor in the propagation of a thrombus.

By means of a simple experiment of mixing washed platelets with a solution of fibrinogen and adding varying amounts of thrombin, it can readily be shown that these three agents alone determine retraction.

Summary: It can be postulated that any means which diminishes or slows clot retraction should be valuable prophylactically against thrombosis. The reduction of the number of circulating platelets is a theoretical means but is not feasible clinically. The reduction of the potential formation of thrombin is readily accomplished by heparin and by dicumarol. Particularly important as a prophylactic measure is the correction of anemia, since the lower the cell volume, the greater the retractility of the clot.—*T.P.B.*

\* \* \*

### Duodenitis

*Duodenitis in Childhood.* By James B. Gillespie and Richard E. Dukes, *Pediatrics*, 6:4, 601-606, Oct. 1950.

Duodenitis produces hyperemia and stippling of the serosa but the wall is not indurated and on palpation the duodenum is indistinguishable from one that is normal. In childhood the most prominent radiologic finding is the marked irritability of the duodenal cap noted at fluoroscopy. The radiographs show the reticular appearance due to edema of the mucosa or indentations of the contours resulting from swollen folds seen in profile. The indentations, however, are inconstant and change after each contraction. There is no permanent deformity seen in the cap as seen in ulcer scars. The symptoms are similar to those found in uncomplicated duodenal ulcer, but much milder. Vomiting occurs occasionally and night pain is rather frequent in younger children.

The authors report cases in the following age group, 12 years, six years, five years, 4½ years and 3½ years. It is well recognized that adults with peptic ulcer not infrequently give a history of typical ulcer symptoms beginning in childhood.

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- Preventive Medicine and Public Health.* Sec. Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore. Written, Oct. 28, San Francisco. Oral, Oct. 29, San Francisco.
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- Surgery.* Sec., Dr. J. Stewart Rodman, 225 South 15th St., Philadelphia. Written, various centers, October, 1951.
- Thoracic Surgery.* Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit. Written, Sept. 14, various centers.
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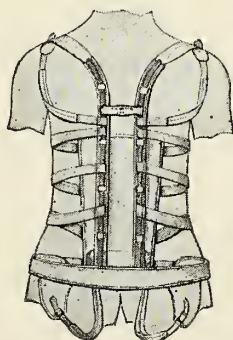
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of the duodenum should be considered in any child with vague or ulcer-like abdominal complaints.—*D.R.D.*

\* \* \*

### Death in Hypertension

*Causes of Death in Hypertension.* By Donald E. Smith, Howard M. Odel, James W. Kernohan, *Am. Jnl. Med.*, 9:4, 516-527, Oct. 1950.

The authors reviewed the records of 2,650 persons with arterial hypertension who came to autopsy at the Mayo Clinic between 1924 and 1948. In 376 or 14 per cent of the total number it was possible to say no known etiologic factor had existed and hence the hypertension was "essential." Retinoscopy and clinical data were employed to classify each case in one of four "hypertension groups," and thus group one was the mildest and group four was the most severe. Every case was categorized by the clinical findings at the time of death. These findings plus autopsy data permit confirmation of previous reports in the literature and a few elaborations and additions to previously reported experience.

Causes of death were the following: 1. congestive heart failure, 2. coronary disease, 3. cerebrovascular accidents, 4. uremia, 5. all causes unrelated to the hypertension. In the entire 375 cases death was due in 109 (or 29 per cent) to causes unrelated to the hypertension.

Causes of death related to the hypertension for all groups were: congestive failure, 26 per cent; coronary disease, 9.8 per cent; cerebrovascular accident, 14.9 per cent; uremia, 20.2 per cent. Uremia caused death in only three per cent of the mildest cases, but in 59 per cent of the group four hypertension. The great majority of all cases had clinicopathological evidence of impairment of more than one type. Coronary disease was the commonest finding in the two milder groups but was found in only 55 of the 100 cases of the most severe hypertension. Death was from causes related to hypertension in only 40 per cent of the mildest group (1) but increased to 97 per cent in the most severe group (4).

The mean age of death according to hypertensive groups: 1 and 2, 61.7 years; 3, 53.6 years; 4, 47 years. The sexes and ages at death were about equal in groups 1, 2 and 3, but in group 4 the mean age at death in males was 48.1 and females 42.6. These observations differed from those of other authors who have stated that hypertension was more frequent in females and that hypertensive females survived longer than hypertensive males. At autopsy every one of the 376 hearts was enlarged. There was a correlation between the weight of the heart and the severity of the hypertension, but none existed in relation to the duration of the hypertension. The study is well documented and contains much instruc-

tive factual data that cannot be included in a summary. Tables recapitulate the material presented.

This reviewer believes such carefully chosen and thoroughly studied series of cases with complete clinical and autopsy material are valuable contributions to the literature.—*P.W.M.*

### Career Investigator Appointed

The American Heart Association recently became the first voluntary agency to undertake a program providing for continuing careers of scientific research investigators when it announced the appointment of Dr. Victor Lorber of Cleveland, Ohio, as its initial career investigator.

Dr. Lorber, associate professor of biochemistry at Western Reserve University, will receive a starting annual stipend of \$12,000 to conduct research relating to disorders of the heart and blood vessels. It is the intention of the heart association to continue this support throughout the productive life of the investigator. This new type of research support, which has long been advocated by leading scientists in this country, makes it possible for investigators to devote life-long careers to medical research.

The career investigator is free to engage in research of his own choosing in any institute in the United States which offers adequate facilities. In addition to his stipend, a maximum of \$7,500 per year is available to him for technical assistance and supplies. The institution in which he chooses to work will receive \$1,000 annually for overhead.

Dr. Lorber has been working on a study of the metabolism of the heart muscle utilizing isotope techniques, to gain new knowledge about the response of the heart muscle to disease and to therapeutic agents.

The program of the American Heart Association provides for the appointment of additional career investigators as funds are available.

### Vitamin Corporation Buys Chemical Company

U. S. Vitamin Corporation, New York, has announced the purchase of Arlington Chemical Company, Yonkers, New York. The 72,000 square foot plant, with a large new building to be constructed, will be utilized to enlarge the services of both U. S. Vitamin and Arlington to the medical and pharmaceutical professions.

### Medical Motion Pictures Available

A revised catalogue of motion pictures available through the Committee on Medical Motion Pictures of the A.M.A. is now available. The catalogue lists 62 films, most of which are at the professional level. Fourteen are suitable for showing to lay groups.



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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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## Acute Anesthetic Emergencies

Paul H. Lorhan, M.D., and E. Metz Wright, Jr., M.D.

Kansas City, Kansas

Acute emergencies arising during the course of anesthetic and operative procedures are of paramount importance to the members of the surgical team, and often demand rapid interpretation and instantaneous intervention to forestall an unfavorable outcome.

The physiological processes, both normal and altered by the anesthetic and surgical procedures, are a closely integrated aggregate and may be discussed from a systemic viewpoint only by keeping in mind their inter-reliance upon each other. However, for practical purposes we shall attempt to classify acute anesthetic emergencies according to the system predominantly affected.

The effects of anesthetic agents upon the respiratory system are primarily concerned with the trans-alveolar exchange of gases which are controlled by physical laws.

Ninety-nine per cent of anesthetic fatalities are due to some interference with the efficiency of the respiratory and circulatory systems causing a deficiency in oxygenation.<sup>1</sup> Any condition which interferes with insufficient diffusion of gases across the alveolar membrane will lead to an inefficiency of the respiratory cycle and alterations in respiratory physiology. These changes may be of an acute nature or may be insidious in onset and terminate in an acute respiratory collapse.

Respiratory depression results in an interference of the ability of the body to produce the necessary interpulmonic pressure changes to cause a flow of gases from the atmosphere to the alveoli. The decreased diaphragmatic and intercostal activity and the rapid onset of cyanosis make the diagnosis of this condition obvious. The most common cause of this condition is overdosage of the anesthetic agent, particularly with the rapid acting agents, in an attempt to satisfy an impatient surgeon. Since individual tolerance to drugs is such a variable entity, it is imperative that each patient be meticulously

observed during induction until this tolerance can be accurately determined.

Alterations in the ability of the thorax to expand and produce a negative intrapleural pressure will result in the same physiological phenomenon. This may be seen in diaphragmatic and intercostal paralysis coincident to high spinal analgesia, pneumothorax and mediastinal shift during chest surgery, paradoxical respiration, or constricting surgical dressings or casts.

The immediate treatment of this condition consists of supplying an adequate amount of oxygen to the alveolar membrane. This is most easily accomplished by rhythmical manual compression of the bag of the gas machine delivering 100 per cent oxygen, or by means of mechanical<sup>2, 3</sup> or electrophrenic respirators.<sup>4</sup> This will be sufficient in the vast majority of cases to maintain respiratory function until the drug is dissipated or metabolized or until the pressure alterations can be corrected. It is important that positive pressure be diminished to zero on the expiratory phase of respiration to prevent interference with alveolar circulation, venous return to the right heart and the fatigue associated with efforts to exhale against positive pressure.

This complication is obviated by use of a positive-negative mechanical respirator or the electrophrenic respirator which has been effective in increasing cardiac output and elevating blood pressure in experimental animals with high spinal analgesia. Reinstitution of effective respiratory effort may then be accomplished by the administration of counter-depressants, prostigmine in the case of curare overdosage, analeptics (i.e. metrazol) for pentothal depression, and correction of the physical imbalances.

The other most common cause of decreased alveolar oxygen is mechanical obstruction. This may occur at any point between the alveolar membrane and the oxygen supply, whether it be the atmosphere

or the oxygen tank. In contradistinction to respiratory depression, the anesthesiologist is presented with the syndrome of increased respiratory effort, abnormal respiratory sounds if the obstruction is incomplete, and decreased or absent excursions of the breathing bag.

Obstruction of the upper respiratory passages is usually caused by faulty position, lingual relaxation, enlarged tonsils or adenoids or intrapharyngeal tumors or foreign bodies. Removal of the foreign body, gum, displaced dentures or vomitus and insertion of a nasopharyngeal or oropharyngeal airway will correct this condition.

The physical and emotional stress of labor or acute traumatic conditions may impede gastric motility to such an extent that food may remain in the stomach for as long as 12 hours.<sup>5</sup> In such conditions where anesthesia is contemplated, it is well to prevent post-emetic aspiration by emptying the stomach by induced emesis or gastric lavage. If vomiting occurs during induction the anesthesia must be discontinued until the patient recovers enough to clear the trachea by coughing; Trendelenburg position and mechanical aspiration are then performed.<sup>6</sup> This should be followed by reinstitution of anesthesia, endotracheal intubation and catheter aspiration of the trachea. At the termination of surgery the patient should be bronchoscoped to insure bronchial patency.

The presence of vomitus, mucus or blood on the vocal cords may precipitate varying degrees of laryngospasm, especially during the use of parasympathomimetic agents.<sup>7</sup> Aspiration of the larynx, positive pressure on the breathing bag for a few breaths and deepening of the anesthesia will usually overcome the spasm. If this is not successful topical application of cocaine, either transorally or trans-epiglottically, and endotracheal intubation may be resorted to.

The sudden gravitational movement of large quantities of pus into the trachea from a bronchiectatic lung which is uppermost in a patient placed in the lateral position for lobectomy may cause a blockage of the airway.<sup>8</sup> In such cases immediate aspiration will usually relieve the obstruction. The use of preliminary postural drainage,<sup>9</sup> preoperative bronchoscopy and endobronchial intubation will seal off the intact lung and prevent the patient drowning himself.

Bronchospasm is fortunately a relatively rare occurrence and presents a picture similar to an acute asthmatic attack, which may be the underlying cause. Deaths have been reported in what appeared to be a bronchospastic or atelectatic condition which was attributed to curare reaction or overdosage.<sup>10</sup>

The use of (11) 70-30 helium-oxygen mixtures will increase the ability of the gases to pass through the constricted bronchi. Administration of intravenous antihistaminics and the change to ether may be beneficial. In patients with a history of asthma it is well to avoid the parasympathetic agents and include antihistaminics in the preoperative medication.

Inability of alveolar oxygen to cross the membrane, due to alterations of permeability, may prevent oxygenation of alveolar blood. This may be the result of pulmonary edema or alveolar impermeability from exposure to toxic gases. Aspiration of excess fluid and administration of oxygen under intermittent positive pressure will raise alveolar oxygen tension, relieve hypoxia of the alveolar membrane and help to restore alveolar permeability.<sup>12</sup>

The appearance of circulatory complications during anesthesia are often sudden and dramatic in onset. Arterial hypotension may be due to primary, secondary or vasogenic shock. Primary shock is associated with a rapid increase in size of the vascular bed, from sympathetic paralysis or from reflex neurogenic stimuli, and is most effectively treated with various vasopressors, among which intravenous methedrine in 5 to 10 mg. is the most effective. Prophylactic administration of methedrine is effective in preventing the hypotension seen following spinal analgesia.<sup>13</sup>

Secondary shock is most satisfactorily treated by replacing the type of fluid that has been lost.<sup>14</sup> In cases of massive hemorrhage intra-arterial transfusion under pressure may be life-saving. Losses of large amounts of serum or dehydration are effectively corrected by plasma and fluid administration. The alterations associated with the abnormal capillary permeability of vasogenic shock may be improved by the administration of adrenal cortex extract.<sup>14</sup>

Continuous electrocardiographic tracings or direct reading oscillographic electrocardiography have demonstrated a much higher incidence of cardiac irregularities than is evident from clinical observation.<sup>15</sup> This is especially true during endotracheal intubation<sup>16, 17</sup> and extubation.<sup>18</sup> The majority of the arrhythmias are transitory and inconsequential and may usually be corrected or prevented by the intravenous administration of procaine,<sup>17, 19</sup> pronestyl,<sup>20</sup> or quinidine.<sup>21</sup> However, should cardiac irritability continue to increase an acute cardiac emergency may be precipitated.

Sudden cessation of effective cardiac function will usually be evident first to the anesthesiologist, especially if continuous palpation of the pulse or continuous E.K.G. observations are being made. Ar-



rest may occur at any depth of anesthesia for any type of operative procedure and may even occur under spinal or local analgesia. The clinical picture is pathognomonic and is characterized by the staring expression, the relaxed jaws, fixed pupils, grayish pallor and mottling of the skin. If the operative procedure is in process the clinical impression may be verified by having the surgeon palpate the heart or great vessels directly.

The etiological factors concerned are (1) idiosyncrasy to the anesthetic drug, (2) ventricular fibrillation, or (3) vagovagal reflex.<sup>22</sup> Chloroform, ether, cyclopropane and ethyl chloride are particularly important in the first category and may be especially dangerous if associated with hypoxia and excitement.<sup>23</sup> The reduction of excitement by adequate premedication, prevention of suboxygenation during induction and maintenance of anesthesia, and elimination of reflex stimuli by local or topical anesthesia and atropine, are important prophylactic measures. Adequate oxygenation of the tissues is dependent upon both respiration and circulation, and each must be maintained to provide oxygen to the cells; however, in cardiac arrest restoration of the latter is of primary concern since the blood will give up increased amounts of oxygen depending upon tissue demand as long as circulation is maintained.

Once the diagnosis of cardiac arrest has been made, a preconceived plan of action is mandatory if successful restoration of cardiac function is to be anticipated. Any program which does not include cardiac massage will result in a high percentage of failures. Even when the condition is recognized early and a well conceived plan is promptly and boldly instituted, more than 50 per cent of these cases will result in fatality.<sup>24</sup>

The use of cardiac stimulants is time consuming and does nothing more than sensitize an already excitable heart.<sup>25</sup> Epinephrine alone will never revive a stopped heart.<sup>26</sup> The value of drug therapy is only to support the mainstay of cardiac resuscitation, cardiac massage.

Manual massage of the heart is the method of choice in cardiac resuscitation, and its chance for complete success without mental deterioration is directly dependent upon the interval of time between cessation of cardiac action and institution of massage and probably is between three and one-half and seven minutes. The patient's chances of survival depend directly upon the ability of the surgical team to respond with alacrity to the situation.

Cardiac massage is necessary to give mechanical stimulus to the heart, empty the heart chambers, maintain cerebral and coronary flow and increase

cardiac tonus. By effective cardiac massage a systolic pressure of 60-70 mm. Hg. can be produced.<sup>27</sup> A complete set of instruments for thoracotomy must be immediately available, additional personnel must be available to act as timekeeper, prepare drugs, supervise administration of fluids and assist the anesthesiologist in maintaining pulmonary ventilation by endotracheal intubation and controlled respiration. Artificially controlled respiration not only rests the respiratory muscles, but decreases their oxygen requirements.<sup>28</sup> The surgical team must be previously instructed in the proper operative procedure.

The approach to cardiac massage may be transabdominal, transabdominal-transdiaphragmatic or transthoracic, of which the latter is much the most efficient, but which depends to a certain degree upon the type of operation and the apparent effectiveness of the massage. The stimulation of grasping or cutting the skin has been reported to reinstitute cardiac action.<sup>29</sup>

Upon opening the chest the heart is immediately massaged for two to three minutes through the pericardium to establish an immediate artificial circulation.<sup>25</sup> The pericardium is then opened and direct massage performed by grasping the heart with the fingers posterior and anterior at a rate of 40 to 50 times per minute with complete relaxation between compression to allow for adequate filling, and with occasional rest periods to allow the heart opportunity to resume normal spontaneous rhythm. If the beat becomes progressively weaker with cessation of massage, the intraventricular and intramural injection of 10 cc. of 1:10,000 adrenalin after first desensitizing the heart with five cc. of two per cent procaine injected into the right auricle and diffused by massage may improve cardiac contractions. The intrapericardial injection of procaine, pronestyl, cocaine or metycaine may also be beneficial.

The presence of ventricular fibrillation may persist and require serial defibrillation by means of electrical stimulation which will cause a total response of the muscle fibers and coincidental occurrence of their refractory periods so that a synchronous response to the next normal stimulus may be elicited. Two sterile padded electrodes, one anterior and one posterior, are applied to the heart, and an electrical current of one to one and one-half amperes, through a 60 cycle alternating current, is applied for 0.1 to 0.5 second. Several stimuli may be necessary and if cardiac action does not respond, five cc. of one per cent calcium chloride solution injected intramurally into the right ventricle may re-establish myocardial tone and contractility.

Acute vascular phenomena such as cerebral or coronary occlusion or hemorrhage rarely complicate

surgical and anesthetic procedures, but may be dramatic in their effects if they do occur. Cerebral accidents under general anesthesia may occur from sudden increases in blood pressure and may be manifested only by changes in pupillary fixation and dilatation. Under spinal analgesia in a hypertensive patient, the sudden appearance of coma, flaccidity of the upper extremities and loss of corneal and light reflexes may indicate cerebral vascular accidents. Coronary occlusion may show only the signs of acute failure under general anesthesia, but may present the typical picture of precordial pain, dyspnea and hypotension with spinal analgesia. The diagnosis of either of these conditions, when possible, prompts immediate cessation of surgery and anesthesia and institution of proper supportive therapy.

Acute anesthetic emergencies relating to the nervous system are usually in the form of increased stimulation of the central nervous system since autonomic results are usually manifested by their effects upon respiration and circulation. The most important condition is the appearance of convulsions which may be preceded by muscular twitchings. Certain types of patients seem to have a peculiar predilection to convulsions and in some instances have been found to have electroencephalographic changes similar to those seen in epilepsy.<sup>30</sup>

Certain pathological states predispose to convulsions. Among these are alkalosis, anoxemia, hyperpyrexia, azotemia and intoxication with drugs of a convulsant nature. Ether is the principal offender, but convulsions have occurred with cyclopropane,<sup>31</sup> chloroform,<sup>32</sup> nitrous oxide,<sup>33</sup> ethyl chloride,<sup>34</sup> vinethene and ethylene.<sup>35</sup> The usual occurrence is in young patients with sepsis or toxemia,<sup>36</sup> a high exogenous or endogenous temperature with hypercapnea from elevated metabolic activity.<sup>37</sup> The convulsive state is dangerous, respiration is suspended, and the subsequent cerebral anoxia predisposed to propagate the convulsive seizure. Administration of intravenous barbiturate, cessation of ether, and correction of hyperpyrexia will control the seizure, and pulmonary ventilation must be controlled by the necessary means.

Emergencies occurring in the immediate post-operative period may be more carefully controlled by the utilization of a postanesthesia recovery room with adequate nursing personnel especially trained to interpret unusual signs and symptoms peculiar to emergence from anesthesia and with the necessary equipment for rapid treatment should complications arise.<sup>38</sup>

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# An Abstract on New Growths of the Skin and Their Management

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I. *Dermatoses Which May Become Malignant*—Vary from a fraction of one per cent to a maximum of about five per cent:

- (1) Nevi
- (2) Lentigines
- (3) Syphilitic ulcers
- (4) Tuberculosis ulcers
- (5) Stasis ulcers
- (6) Psoriasis
- (7) Lupus vulgaris
- (8) Lupus erythematosus
- (9) Seborrheic keratoses
- (10) Sebaceous cysts
- (11) Epithelial cysts
- (12) Burn scars

II. *Precancerous Dermatoses*—Based on clinical, statistical, and histopathological concepts. In 20 per cent or more of these conditions an epithelioma eventually develops. It is usually squamous cell in type and begins as a squamous cell carcinoma in situ. Clinically, these lesions must be differentiated from superficial epitheliomas:

- (1) Bowen's precancerous dermatoses
- (2) Senile keratoses and solar keratoses
- (3) Keratoses resulting from ingestion of arsenic
- (4) Keratoses resulting from exposure to tars
- (5) Keratoses resulting from radiotherapy
- (6) Leukoplakia, including kraurosis
  - (a) Kraurosis penis
  - (b) Erythroplasia of Queyrat

III. *Cancerous Dermatoses*—

- (1) Xeroderma pigmentosum
- (2) Basal cell epithelioma
- (3) Superficial epitheliomatosis
- (4) Baso-squamous cell epithelioma
- (5) Squamous cell epithelioma
- (6) Melano-epithelioma
- (7) Pager's disease
- (8) Metastatic carcinoma
- (9) Sarcoma cutis
- (10) Multiple idiopathic hemorrhagic sarcoma

I. *Dermatoses Which May Become Malignant*

1. *Nevi (Moles)*: Moles are to be distinguished

between epidermal, dermal, or junction type, the latter of which may terminate in melano-epithelioma, and the intradermal nevus which is benign, according to Traub.<sup>1</sup> However, it has been our experience, and that of others, that any of these can terminate in melano-epithelioma. Furthermore, there are combinations and transitions between these types.

Morphologically, distinction is not always easy between ephelis (freckles), lentigines, the so-called hard nevi of Unna, and the early flat pigmented nevi; consequently, a biopsy is always indicated. Depending upon their histological structure, according to Traub,<sup>1</sup> they are classified as follows:

## A. *Intra-epidermal nevus*

- a. Nevus verrucosus (hard warty nevus)
- b. Nevus verrucosus linearis (line of warty nevi)

## B. *Intradermal nevus*

- a. Verruca mollis (the "common mole")
- b. Nevus papillomatosus
- c. Lentigines
- d. Nevus pigmentosus et verrucosus (soft warty pigmented mark)
- e. Nevus pigmentosus et pilosus (pigmented mark with hair)
- f. Nevus pigmentosus et pilosus et verrucosus (combination of pigmented, hairy, and soft warty mark.)

## C. *Junction or borderline nevus*

- a. Nevus spilus (smooth flat pigmented spot)
- b. Nevus pigmentosus
- c. Nevus lentigines
  - (e) Superficial
  - (b) Deep

## D. *Combination type nevus*

Histologically, it is a combination of one or more of the types mentioned. Clinically, it assumes the characteristics of one or several of the previously mentioned varieties.

## E. *Blue Nevus*

This fortunately is a histologic designation. Clinically, the lesion is often mistaken for a slate-black mole (malignant melanoma).

## *Histologically:*

- (1) Intra-epidermal nevi lie entirely with the

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epidermis and present a proliferation of normal epithelial cells, a mixture of prickle and basal cell type, not referred to as nevus cells. They may or may not be pigmented. They rarely terminate in cancer.

(2) Intradermal nevi are probably the most frequently encountered lesions and are characterized by the occurrence of nevus cells arranged intracutaneously in nests and strands. The cells are of the mature type, and to become malignant they revert to the embryonic type. Pigment is usually present in varying amounts. Cancer rarely, if ever, occurs.

(3) In the junction type nevus, the process may be interpreted as hyperpigmentary due to an increased number of melanoblasts at the epidermo-dermal junction. The cells are not separated from the epidermis as in the intradermal nevi where the nevus cells are seen in nests or strands, usually detached from the epidermis. The cells in this type are of the embryonic (anaplastic) type, and the lesion constitutes the forerunner of the malignant neoplasm. It is the lesion we prefer to call the potential malignant melanoma.

2. *Lentigines*: These must be distinguished from freckles, but lentigines occur later in life and are seen on the genitalia, thighs, and trunk. Lentigo maligna usually terminates in melano-epithelioma.

3. *Syphilitic ulcers*:

4. *Tuberculosis ulcers*:

5. *Stasis ulcers*: No statistics are available concerning the percentage of malignancies occurring in these lesions; however, it would be between one per cent and five per cent.

6. *Burns*: Vary from a fraction of one per cent to a maximum of about six per cent.

7. *Lupus Vulgaris*: Many complications of lupus vulgaris are known, and high on the list are carcinomas. They occur as a sequel in from one-half per cent to two per cent of the cases. Sarcomas may also occur after actinodermatitis, or independently. Cutaneous horns occasionally develop on a patch of lupus.

8. *Seborrheic Keratoses*: Because, morphologically, these lesions are so frequently mistaken for moles, melanomas, or basal cell carcinomas by the profession, or just "cancers" by many patients, these lesions are described in detail.

The most common sites for occurrence of seborrheic keratoses are the temple and forehead areas, the back, and the chest. The lesions may occur on any part of the face, and in some instances are seen all over the body.

They vary in size from about five mm. to two

cm., and in color from a light yellowish brown to black. The lesions are greasy in feel and can usually be scraped off the skin with any sharp instrument. A clinical diagnosis is usually readily made, but is oftentimes incorrect, as the lesion is often confused with nevus pigmentosus, melano-epithelioma, or blue nevus, because of the deep brown or even bluish-brown color when developed. By observing the small black plugs in the lesions, the distinction can be made.

Seborrheic keratoses are easily treated and can be eradicated with minimal scarring by freezing with carbon dioxide ice, electro-desiccation, and other mild destructive measures.

9. *Sebaceous Cysts*: The rare occurrence of malignant change arising in elderly people is to be remembered.

## II. *Precancerous Dermatoses*

1. *Bowen's Disease*: Bowen's precancerous dermatoses are really cancers in situ (squamous cell carcinoma in situ). The pathological changes seen in Bowen's disease are also seen in all types of precancerous dermatoses, including the squamous cell epithelioma, in situ, of the mucous membrane and genitalia; however, they do not have the clinical features of Bowen's disease. Also, distinction must be made between the cells of Paget seen in Paget's disease of the nipple and the cells of Bowen.

The term, Bowen's disease, should be confined to lesions which simulate a nodular ulcerative syphiloderma with an aciform configuration. It is a plaque covered with a varied depth of epidermis and may become ulcerated. There is usually peripheral extension and central involution. The disease usually persists for years without extension, but many cases have been reported in which squamous cell epithelioma eventually developed metastasis and death resulted.

2. *Senile Keratoses*: Upon rubbing the finger over a senile keratosis it feels like a small piece of gravel. In other words, it is a hard area of hyperkeratosis.

These lesions occur in people past middle life and are seen usually over the temples and other parts of the face, the sides of the neck, and over the dorsal surfaces of the hands. They are yellowish brown to dark brown in color.

Senile keratoses are most commonly seen in individuals with blonde or red hair, and in persons with skin known as sailor's or farmer's skin. We make no distinction between solar keratoses, resulting from the sun, or senile keratoses, because both are predisposed by the sunlight.

An early sign of malignant degeneration in a senile keratosis is the formation of an indurated



area surrounding the base. Later signs of cancerous degeneration are erosion, ulceration, or a change to a very friable tissue with increased vascularity. Of course, histological examination is the only positive proof of malignant change.

Every senile keratosis should be destroyed. There are many acceptable treatments—surgical excision, cryotherapy, electro-desiccation, and currettement. Currettement is an excellent method of therapy, and the one of choice in many instances.

3. *Arsenical Keratoses*: A history of arsenical ingestion in the years past, usually for over a long period of time, is not always obtained, because the patient may not know he has ingested the drug. The form of arsenic is usually one of the inorganic salts such as Fowler's solution. The organic salts rarely produce these lesions.

These appear as thick, wart-like, flat-topped, lesions on the palms and soles. They are multiple, bilateral, and sometimes closely set. On palpation, they are resistant to movement.

Hyperpigmented patches or freckling on the face, on the sides of the neck, or on the body, may also appear. Epitheliomas developing in these lesions are squamous cell in type. These are a resistant type of cancer and should be surgically excised. They are usually radioresistant.

4. *Keratoses Resulting From Exposure to Certain Tars*: It has been recognized for many years that certain tars will produce malignant changes in the skin after body contact.

5. *Keratoses Resulting From Roentgen or Radiotherapy*: This group would be more correctly labeled chronic radiodermatitis, because keratoses are only one morphological group of lesions which develop in persons who come in contact with roentgen and radium rays.

Chronic radiodermatitis occurs on the hands and sometimes on the faces of persons administering roentgen rays, or who have had the rays administered therapeutically. It is manifested by a scarring, atrophy, obliteration of the normal lines of the skin, telangiectasia, alopecia, longitudinal striations, and sometimes loss of the nails. Frequently, only after many years have passed, do ulcers and keratoses develop. Epitheliomas develop in about 20 per cent of the cases in which the damage is greater than just a simple telangiectasia, according to Montgomery.<sup>2</sup>

6. *Leukoplakia*: Leukoplakia is seen most often on the lower lip and buccal mucosa, less frequently on the tongue, and occasionally on the vagina. If the vagina is involved, the lesion may accompany kraurosis vulvae in the advanced stage. If the penis is involved, the term "kraurosis penis" is applied.

Erythroplasia of Queyrat occurs on the glans, on

the prepuce, and on the vulva, as well as on the buccal mucosa. This condition has been described by some authors as simply an early moist stage of leukoplakia.

The earliest lesion of leukoplakia is a snow-white or bluish-white patch. In the mouth it must be differentiated from monilia, lichen planus, lupus erythematosus, herpes simplex, and malignant changes. Monilia can be ruled out by means of cultures; and, of course, a biopsy will be helpful in the other diseases.

Early lesions may be reversible; that is, upon removal of the irritant, the most important of which is tobacco, the leukoplakia may disappear. Other factors are ill-fitting dentures and poor oral hygiene. Individuals who have syphilis have a high incidence of leukoplakia, and therefore this disease must be ruled out.

The management of leukoplakia is important. The source of the etiology should be obtained and removed. Usually, the thick verrucous lesions do not disappear, even when all sources of irritation are removed, and the physician must decide whether to treat the lesion or follow conservative measures. In our office, we usually choose to treat the lesions, usually by some destructive measure as cautery.

### III. *Cancerous Dermatoses*

1. *Xeroderma Pigmentosa*: This is a rare disease which begins in childhood, characterized by hyperpigmentation, atrophic areas, telangiectasia, warty and malignant growths.

When the child is first placed out in the sun, the early lesions become manifest. It may follow sunburn. The early lesions resemble freckles and are usually noticed on the face or exposed portions of the body, later developing on other areas of the body. As the disease progresses, telangiectasia, angiomas, atrophic areas, and warty growths of different character, occur. They may be flat or convex and very much resemble verrucous lesions seen in old age. At a later date, malignant changes occur and various types of neoplasms develop, the most common of which is basal cell epithelioma, and less frequently, squamous cell carcinoma. Melano-epitheliomas, sarcomas, and even endotheliomas have been reported.

2. *Basal Cell Epithelioma*: Jacob, in 1827, described these lesions which are frequently called "rodent ulcer."

Basal cell epitheliomas usually begin as a small, pinhead-to-pea-sized, pearly nodule which may gradually enlarge. This eventually will ulcerate. A typical lesion is characterized by a chronic, relatively slow and progressing ulcer, with a rolled, pearly, telangiectatic border, covered in the center

with a brownish crust, which, when removed, bleeds easily. Basal cell epitheliomas are locally malignant. They do not metastasize as such when metastasis occurs. It means they have changed to transitional types.

Basal cell epitheliomas are usually easy to eradicate, and treatment of various types can be employed, including roentgen or radium therapy, simple excision, cauterization, and various electro-surgical methods.

Whenever possible, it is preferable to take a small specimen for biopsy in order to be sure you have made the correct clinical diagnosis, and a biopsy is a MUST for all patients who fail to respond promptly to treatment and for any patient who has a recurrence.

3. *Superficial Epitheliomatosis (Erythematoid benign epithelioma)*: These lesions are often missed because they may look just like any ordinary, dry, scaly, eczematoid patch; but upon closer observation, these superficial scaly plaques have a very fine thread-like, elevated, pearly border which may be so minute as to escape recognition unless viewed with a hand lens. These plaques may vary in size from a few centimeters to areas as large as the palm. These lesions are usually solitary, but sometimes do occur in larger numbers, even as many as 100.

These lesions must be differentiated from psoriasis, lupus erythematosus, tinea circinata, types of eczema, extra-mammary Paget's disease, and arsenic epithelioma.

These lesions are usually radio resistant, and a destructive measure such as carbon dioxide snow is the treatment of choice.

#### IV. *Basal Squamous Cell Epithelioma (Transitional epithelioma)*

Montgomery states, "In a series of basal cell epitheliomas diagnosed clinically as such, in from 15 to 20 per cent of the cases, upon microscopic examination, tissue will be proved to be transitional, or, basal squamous cell epitheliomas.

Histologically, these cancers represent a change to the squamous cell type and are not degenerate forms of the basal cell; consequently, these lesions are more difficult to treat and the prognosis is changed, the prognosis now being that of a squamous cell epithelioma, and more specifically, that of a Grade II squamous cell epithelioma.

Baso-squamous lesions are found most frequently on the cheeks, eyelids, nose, forehead, ears, scalp, and canthi of the eyes. They may also be found on the mucous membranes.

The lesions begin as discrete nodules or ulcers, and grow quite rapidly.

Histologically, there is a proliferation of tumor cells consisting of dark-staining basal cells, and

lighter staining intermediary and prickle cells, together with partial pearl formation, and parakeratotic and colloidal rather than a horny center.

Baso-squamous cell epitheliomas are relatively radioresistant and are best treated by wide surgical excision or by electro-surgery of various types.

#### V. *Squamous Cell Epitheliomas*

These tumors are found most frequently on the exposed surface of the body of elderly persons, often times in relation with senile keratoses and senile cutaneous changes. Practically all epitheliomas of the mucous membrane of the mouth, nasopharynx, and genitalia are squamous cell epitheliomas.

Squamous cell epitheliomas are most frequently found on the lower lip. Lesions develop chiefly among farmers and others exposed to the elements, and among heavy smokers. They develop from portions of leukoplakia buccals or leukoplakic vulvitis. Lesions may be found anywhere on the skin, but more typically develop on the cheek, ears, nose, upper extremities, and on the forehead. The lesions are usually crateriform ulcers with a wide, rolled, pearly border, the latter being wider and more indurated than that of the basal cell epithelioma. They may vary widely in clinical morphology, and are frequently verrucous, papillomatous, or fungoid lesions, as well as cauliflower-like growths.

The typical squamous cell epithelioma usually is readily recognized, but in many cases it may simulate the basal cell epithelioma or the chronic granuloma. When the diagnosis is questionable, a biopsy is taken and the diagnosis is made under the microscope.

The most important part of the therapy, whatever method may be employed, is to destroy the squamous cell epithelioma completely, because of the danger of recurrence, often with increased malignancy and being more difficult to treat, or the subsequent development of metastasis.

There is no uniform agreement among physicians concerning the treatment of these lesions. Radiotherapy, surgery, and electro-surgery, are the methods employed.

#### VI. *Melano-Epithelioma*

Melano-epitheliomas usually begin as a blue-black or steel-blue nodule; occasionally, they are light brown in color. The early lesion may be flat and level with the skin, or it may be elevated. It may be fungoid or ulcerated. Early in the course of the disease, metastasis occurs. It is the most malignant and rapidly fatal of all cutaneous neoplasms. Metastasis may appear in the adjacent lymph nodes, but frequently these escape, and the first evidence of metastasis may be found in any of the internal organs.



Melano-epitheliomas develop at any age from six months onward, the average age of onset being 50 years. They occur on the exposed surfaces, on the extremities, particularly the feet, and on the face. Some authors place a history of trauma or injury in 20 to 30 per cent of their series of cases. Eve<sup>2</sup> reported on lesions which he called implantation melanomas, because months or years after a puncture wound of the palm or sole, melano-epitheliomas developed. All inflammatory whitlow should be examined closely for streaks which are grayish black, because it may be melanotic whitlow.

Melano-epithelioma is to be distinguished from blue nevus, pigmented basal cell epitheliomas, deeply pigmented benign nevus, senile keratosis, and seborrheic keratosis.

Any pigmented nevus that is subject to repeated trauma and irritation, or where there is a history of increase in size, should be removed by wide surgical excision.

In general, a favorable prognosis in melano-epithelioma is dependent upon its recognition at the earliest stages of the disease.

#### VII. *Page's Disease*

As a rule, Page's disease occurs on the breast, among women, although it is seen among men. The process begins with erythema and scaling which involves the areola and nipple. The surface becomes very red, often eczematoid, with weeping and oozing not unusual. The area gradually becomes indurated and infiltrated. There may or may not be retraction of the nipple. The condition may remain as such for many years without any palpable evidence of an underlying carcinoma of the breast. In most cases, however, carcinomatous infiltration occurs early and rapidly.

Just a word about the pathology. In typical Page's disease, large, pale-staining cells are scattered throughout the epidermis. These cells have large, light-colored, vesicular nuclei, and are pale-staining, lying free in the epidermis without evidence of intercellular bridges. These cells are found in the epidermis of the walls of hair follicles and in lactiferous ducts.

#### VIII. *Metastatic Carcinoma*

Cutaneous metastasis may result from carcinoma situated anywhere in the body and may occur at any age, but usually late in life.

Metastasis may reach the skin by (1) direct invasion from subadjacent tumors such as direct extension through the abdominal wall from carcinoma of the gall bladder, or into the skin from a hypernephroma; (2) direct extension through the lymphatics as exemplified by carcinoma en curasse, or

dissemination with involvement of the lymph nodes; and (3) dissemination through the blood stream as occurs in many types of cutaneous metastasis.

#### IX. *Sarcoma Cutis*

The classification of cutaneous sarcoma varies, and there is no uniform agreement as to the tumors which belong in this group. Most authors do not recognize malignant endothelioma. So-called endothelioma capitis of Spiegler should be classed with benign epithelioma. Sarcomatous changes in neurofibroma are discussed under that subject. Spiegler-Fendt sarroid and lymphosarcoma are considered with the lymphoblastomas. Melanosarcomas are discussed with lymphoblastoma.

Kaposi's sarcoma will be taken up next because of its distinctive features.

Sarcoma cutis includes many tumors of the angiomatous, fibromatous, myxomatous, etc., occurring as primary tumors of the skin; also, they may occur secondarily as the result of other dermatoses, either independently of, or after, radiotherapy.

True sarcoma of the skin is rare as compared to various types of epitheliomas.

The clinical picture of solitary sarcomas of the skin is not diagnostic and can be simulated by many conditions as hemangiomas, granuloma pyogenicum, gummas, and deep mycotic infections such as Kerion Celsi.

#### X. *Multiple Idiopathic Hemorrhagic Sarcoma of Kaposi*

The disease is most common in the later decades of life, with lesions usually beginning on the hands and feet. Kaposi originally described the early lesions as reddish-brown or bluish-red nodules, varying in size from that of a pinhead to that of a pea or bean, which soon grow into visible nodules. Because of the marked infiltration and multiplication of the lesions, elephantiasis may result. The course of the disease is slow, and death generally is the result of intercurrent infection. The etiology of the disease is unknown.

#### *Histologically:*

The first change is the hemorrhage in the cutis from one or more vessels. Other vessels become dilated and engorged and there is a deposit of hemosiderin. The infiltrate shortly follows, apparently arising from the walls of the blood vessels, which includes lymphocytes, plasma cells, and mast cells. Finally metastatic figures are seen, and the elastic tissue and the dermal appendages are destroyed by the infiltrate.

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## Personalized Pre-Partum Care\*

John H. Moore, M.D.\*\*

Grand Forks, North Dakota

It has been my good fortune to have met with many of you on several occasions at the University of Kansas Medical Center, one of the truly great medical teaching centers in this country. It is always a pleasure to return to Kansas and meet with Kansas physicians. I learn far more than I am able to impart. You have a rural medical problem and the problem of medical education in a rural state. You are doing something positive about both. We have similar problems in North Dakota and we are learning much from you.

This talk on personalized pre-partum care will not be a didactic presentation of standardized procedures. These, I suppose, could be obtained from bulletins of the Children's Bureau or compiled from any standard textbook on obstetrics. Rather, I hope to bring a philosophic approach to my subject because I believe it has a most important bearing upon what we like to think of as the American way of private medical practice. I have heard rumors to the effect that this way of practice has been attacked!

Over the years we have had the charges leveled at us that we are too self-centered, that affairs of community, state and nation find us self-sufficient and detached. Any thoughtful individual knows that such is not the case. History records no finer contributions to human betterment than those supplied by American men and women of medicine.

We are individualists. God grant that we shall always remain so! The chief reason why the world finds itself in such a mess today is that it has, to a large extent, forgotten the sermon on the mount. Read again the fifth, sixth and seventh chapters of St. Matthew's gospel and you will find that, while Christ spoke to the multitude, this represented individualism at its finest. It is a return to an understanding of the needs of the individual and a helpful, sympathetic and personal attempt to meet those needs that today present the greatest challenge and the greatest opportunity to the American physician. Those who would destroy us as a free profession and make us the servants of a bureaucratic and socialistic state never mention the individual. It is always a mass of statistics, largely false, and the appeal to mass and class consciousness that is used against us.

Unwittingly, I hope, some of our supposed allies

in the field of health have become a bit confused on the subject. Within the past year in my own city, a hospital administrator became very provoked because I would not hold pre-partum clinics, under his direction and in his hospital. More recently, and in my own city, a public health nurse circularized the medical profession by letter, lamenting the fact that her pre-partum clinic had few, if any, patients. I happen to know that in our city of approximately 30,000 people, the doctors do a very high class job in rendering pre-partum care on a private patient-physician basis.

My private obstetric practice is part of a private clinic practice and I feel that, over a period of 30 years, I have come to know my patients rather well. It is a rural practice for we have no large cities in North Dakota and fully 50 per cent of my patients come in from the smaller communities adjacent to Grand Forks. They come to see me because, in far too many instances, there are no physicians in their home communities. You had a similar situation in Kansas. They come expecting that they will have a complete history taken and a complete physical examination made. They know about the importance of the Wassermann test and the determination of the Rh factor in pregnancy. They expect urinalysis and blood counts. If they hadn't learned of the importance of these things, and many more, from me they would have learned of them through the Ladies Home Journal, The Woman's Home Companion, Good Housekeeping and the many homemakers' clubs and other women's clubs throughout the state. Glaring omission of any of these procedures by me is likely to be picked up by the patient, or by her neighbor or in her club. What, then, do I mean by personalized pre-partum care?

In the first place, I mean that we will study our obstetric patient as an individual. For one thing, this means that, as we take her history, we will pay particular attention to those antecedent illnesses or operations which might serve to make pregnancy hazardous. Furthermore, we will go even farther and note the family history and the marital history of the patient with great care. In that marital history, especially when one is dealing with a primiparous patient who has been married for three years or more, the question, "How long have you been 'trying' to become pregnant?" may suggest a low-fertility due to hypothyroidism and the desirability of a basal metabolic test and blood cholesterol determination.

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Some years ago, I ran a series of routine basal metabolic determinations on all pregnant women. This was done in connection with their first pre-partum visits, which meant that most of the tests were done in the first trimester of pregnancy. I obtained much valuable information from this work and came to the conclusion that minus or border line (zero to plus 10) readings were significant but that a single reading over plus 10 was usually a mechanical error and called for a re-check. The routine testing of all pregnant women with metabolic tests was discontinued because of the expense and inconvenience to the patients and the inability of our limited laboratory staff to handle it. But I learned that a zero or minus reading always calls for close observation of the patient.

Now that we have added blood cholesterol determinations to the metabolic studies in selected cases, I place the upper limits of normal as plus 10 on the basal metabolic reading and 250 milligrams per cent as the upper limit of normal on blood cholesterol. Empirically, I suppose, when a pregnant woman has a basal metabolic reading of zero to minus 10, I give her from one-half to one grain of thyroid extract per day; and I am likely to do this if the BMR is up to plus 10, provided the blood cholesterol is at or near 250 milligrams per cent.

This talk does not concern itself with sterility but the question, asked of the pregnant woman, "How long have you been 'trying' to become pregnant?" can most certainly point the way to a case of "low fertility" and, therefore, a borderline or an actual sub-thyroid condition which, as we all know, furnishes a large number of early, spontaneous abortions. I would add, just here, that we do not consider any patient a candidate for complete sterility study, in the absence of gross genital tract disease, who has not been married for a period of three years with normal sexual life throughout that time. This, of course, focuses some attention upon the husband. Is he "delighted" with the pregnancy which now brings his wife to your office? It is just possible that the woman who had been "trying" to get pregnant for some time did not have a sub-thyroid state but rather a refractory spouse!

In a series of 57 patients with toxemia of pregnancy I followed for a minimum of one year and a maximum of 19 years, the incidence of toxemia was over three times as high in patients whose parents had suffered from hypertension. I am also convinced, although without statistical proof, that obesity in both parents makes weight control in the obstetric patient more difficult.

Since it has been roughly estimated that approximately 10 per cent of pregnancies in white women will terminate in abortion, and since our knowledge

of the etiology of abortion is not too exact, closer attention to the menstrual histories of our obstetric patients will sometimes help us to preserve a pregnancy which might otherwise terminate in abortion. The obstetric patient who established her menses late and who has a scanty irregular flow is an excellent candidate for early abortion.

And then there is the patient with an antecedent history of rheumatism, recurrent tonsillitis or scarlet fever, with or without rheumatic heart disease. I am especially concerned, in such a patient, to detect the first signs and symptoms of cardiac inadequacy.

In North Dakota, x-ray screening of the general population for tuberculosis has been extensive and productive of much good. The follow through by the persons who have been told to see their physicians because of some questionable pathology in the chest and the follow-up by physicians has, for the most part, been good. When a history is obtained from an obstetric patient of questionable chest pathology, it is doubly important that her follow-up by x-ray examination be meticulous.

Many more illustrations could be given to show this phase of personalized pre-partum care, but the foregoing will suffice.

Secondly, when the examination of the obstetric patient is made, make it a complete one! That may be unnecessary advice in Kansas; but I can assure you that I see a number of patients each year on my pre-partum service who have been elsewhere and remark, at the conclusion of my examination, "Doctor, that is the first time I have been thoroughly examined during pregnancy!" Our pregnancy records, on a standard form, are made out in duplicate and are continued, in duplicate, throughout the pregnancy. By nature, I am a lazy man! Such a system of keeping records finds me with a completed pregnancy record when the patient goes to the hospital and all I have to do is to carry that record to the hospital on an early visit.

I start at the head and work downward, reserving the pelvic examination and pelvic measurement for the last. And just a word about pelvimetry! I know that many modern writers state that external pelvimetry is of little or no value. I protest! It is of value for two reasons: 1. It impresses the patient with the fact that you know she has a pelvis; and 2. It gives you a rough idea of the architecture of that pelvis. I still take the interspinous, intercrural, bi-trochanteric, external conjugate, bi-tuberous and posterior sagittal diameters some time in mid-pregnancy, especially in the primiparous patient.

I have my own way of taking the diagonal conjugate. I know that is 10.5 cm. from the base of the index finger of my right hand to the tip of the middle finger of the same hand and that if I can

palpate the promontory of the sacrum on a deep, but not uncomfortable, bimanual examination on that patient, she has a narrow antero-posterior diameter of the inlet. As for the pelvic outlet, it still seems a prudent rule to me to add the bi-tuberous diameter to the posterior sagittal, and if the sum is 15 centimeters or less, to conclude that the patient has a narrowed pelvic outlet.

I am not an authority on x-ray pelvimetry, but this seems as good a time as any to attempt a personal and clinical evaluation of it. DeLee, in introducing the subject of the mechanism of labor to undergraduate students used to discuss the powers, the passages and the passenger (or passengers!) as the three important factors in the mechanism of any given labor. One certainly cannot gauge the effectiveness of the uterine contractions, nor the auxiliary effectiveness of the abdominal muscles in the second stage of labor, the resistance of the soft parts, the moldability of the head in the early stages of the mechanism of any given labor. That leaves for x-ray pelvimetry the task of giving us the size and shape of the bony pelvis and, with some limitations, the approximate size of the fetal head with some minor observations on the presentation and position of that head in a cephalic presentation.

I have never learned the technique of x-ray pelvimetry! This is fortunate for I have access to the services of a trained radiologist and thus I am not tempted to indulge in wishful thinking. Pelves, in my classification, fall into four types: 1. Large (or normal); 2. Small; 3. Flat, or 4. Distorted. When, as term approaches, my obstetric judgment leads me to question the capacity of any given pelvis, I refer that patient for pelvic roentgenography, and the attempted correlation between clinical and radiographic pelvimetry is very stimulating.

The foregoing approach to this problem has both an obstetric and a financial advantage to the patient. In so far as pelvimetry is concerned, a flat antero-posterior plate of the abdomen has no value. In spite of this, I am not infrequently called upon to see such a plate, taken with a woman in labor or approaching term, and then asked if I do not think she has a contracted inlet!

In our attempts to personalize our pre-partum care we follow rather definite indications as to when to include x-ray pelvimetry in that care. A history of previous dystocia or previous cesarean section calls for x-ray pelvimetry, as do a diagonal conjugate below 11.5 cm. and the sum of bituberous and posterior sagittal diameters of less than 15 cm. Beyond that, there are only three classes of patients in whom its employment is almost routine. First, there is the primiparous patient in whom, with a head presentation, the head is not engaged at term

or in whom the Hillis maneuver is not positive; second, the primiparous patient of 40 or over, and third, the very young primiparous patient, meaning 15 years or younger.

At the time of our obstetric patient's first visit we have the basic laboratory work done. This consists of a urinalysis, hemoglobin determination, red and white blood cell counts, Wassermann test, the determination of the Rh factor and the patient's blood group. When the Rh factor is negative, the husband is asked to report to have his Rh factor determined as well as his blood group. This has been our procedure for several years. It affords an opportunity to become acquainted with some husbands that one would not otherwise see during the pre-partum period, and I am very sure that the added safeguard it provides is well worth while. When I have discussed the Rh factor with a husband, I usually find that he asks other questions about his wife's condition and this affords additional opportunity to obtain his cooperation. Not only that, but I have been pleased by the number of times other prospective husbands have called me to say that they would like to come in and talk about their wives, solely because a neighbor husband, who had had some of these things explained to him, was pleased about it and thought it a fine idea. There is another aspect of personalized pre-partum care which all the bureaucrats in the world can't match!

Get personal with your pre-partum patient about her weight gain in pregnancy, especially when that becomes excessive! I don't know the cause or causes of the toxemias of late pregnancy any more than you do, if as well. But I do know that the incidence of toxemia in our practice, averaging about five per cent for the entire group, is much higher in women who gain weight excessively in pregnancy. When one rules out the clinical triad of toxemia of mid or late pregnancy, hypertension, edema and albuminuria, and still finds an excessive weight gain developing, he is smart if he begins to take unto himself somewhat the role of a psychiatrist.

Not long ago I watched a little primiparous patient gain from 106 to 127 pounds within two months. There was no evidence of toxemia and, like fat men and women the world over, she "didn't eat a thing!" But her husband was away on the road a good deal, she was completely bored with herself and she nibbled and pecked away at this, that, and the other food, unaware of the vast quantities of food and pounds she was storing away. Dr. Calkins was most certainly correct when he insisted upon asking the patient, "What is your 'usual' body weight?"

Get personal with your patient on a few other



matters besides gain in weight in pregnancy! To mention just a few:

1. Constipation. This is endemic among pregnant women in North Dakota. I ask my constipated patients to drink a glass of hot water and to eat an apple or an orange each morning before breakfast and each evening before retiring. Then I ask them to drink at least six additional glasses of cool water during the day. I rarely succeed in getting a total of eight glasses of water into the patient in any one daily period, so it becomes necessary to add mineral oil at bedtime in many instances.

2. Hemorrhoids. As a corollary to constipation, but sometimes without its aid, varicosities do appear in the anal region as well as in the legs. Mineral oil alone, or occasionally with milk of magnesia added, will reduce the incidence of hemorrhoids somewhat; but suppositories will often help a great deal. However, when a pile becomes thrombosed, the kindest thing to do for your patient is to evacuate it by incision following infiltration anesthesia with one per cent novocain solution, then use the suppositories! Show me an obstetrician who is sympathetic toward his patient's piles and who does something constructive about them, and I will show you one who enjoys the gratitude of his patients.

3. The care of the breasts. I have gone through the various routines of the care of the breasts in pregnant women, pre- and post-partum, with the exception that I have not used the recent plastic dressings, and I have now reduced my treatment to what I think are its simplest terms. I ask the pregnant woman to bathe the breasts, particularly the nipples and areolae with Ivory soap, warm water, and a coarse-meshed wash cloth at least three times a week and pat, not rub, the breasts dry with a coarse towel after bathing.

4. Foundation garments. I use the Camp garment exclusively where a pre-partum garment is needed. This is a great advantage to me and a boon to my patients. It helps to relieve low-back pain, it aids in the relief of constipation, it reduces the incidence of lower abdominal discomfort, and it encourages the patient when she realizes that you are making a valiant effort to conserve or improve her figure. We have three women in two stores in our city who vie with each other in fitting Camp garments. I am very glad to cooperate with them by letting them have the "headaches" of fitting while I act as consultant in the matter of inspection. This is just another bit of "personalized" service.

There is so much danger in our strenuous lives that we fall into one of two evil ways, or even into both. We either do everything on an "assembly line" basis or we delegate as much work as we can

to a nurse or an office assistant, especially in the field of pre-partum care. No one uses or values the services of an intelligent nurse more than I, and I have been most fortunate in my selection of them. But I want to talk to my post-partum patient myself and find out, first hand, how things are going with her and, in doing that, I do not want her to feel that she is being rushed into and then crowded out of my office. Several years ago I was called upon to admire a new suite of offices and the particular pride and joy of the physician who owned those offices seemed to be a battery of six cubicles where, he assured me, his nurse could see "six obstetric patients every 30 minutes." The time the doctor was to spend with each patient was not stated. At the last report, his obstetric practice was not flourishing.

I know another physician, a highly successful obstetrician and gynecologist in a large, mid-western city, who is constantly in demand, chiefly, I believe, because he never appears to be crowded. While it may be difficult to get an appointment with him, he always seems to have time to give to each individual patient when she reaches his office. His patients don't seem to mind when one of his well-trained associates delivers them; but they will gladly tell you how much help they get from his patient and personalized pre-partum care.

So far as I have been able to determine, and I'm sure you will agree, there has been nothing scientific in this talk. Everyone knows that obstetrics can stand a great deal more science. If there is any skeptic on this point, let me ask the cause of the toxemias of late pregnancy. There is a niche in the obstetric Hall of Fame in the Chicago Lying-in Hospital awaiting the bust of the individual who can scientifically answer that question. At last reports, it remains unoccupied. Or one can be simpler in his questioning, though still scientific, and ask what initiates normal labor or what determines the size of a baby at term. Yes, obstetrics can stand a great deal more science!

But medicine in general, and obstetrics in particular, can stand a great deal more art! Dr. Henry A. Christian<sup>1</sup> speaking of internal medicine, but just as applicable to other specialties, stated that "there is undesirable emphasis placed on investigation as the most important factor in the training of those who are to become in later life physicians and teachers of internal medicine." He added, "Please note that I said physicians *and* teachers, not physicians *or* teachers, for I believe both need the same form of early training." This entire address is so stimulating that I recommend that you read it in its entirety. Only one further quotation from it need be given to illustrate my point: "Pub-

lication and the developing of a personal bibliography, besides so often being a major interest to the young man, seems to me to have become almost a game or racket utilizing devices to gain multiplicity of published papers."

And so, back to the art of obstetrics in this rambling discussion of personalized pre-partum care. Obstetrics is and will remain the general practitioners' specialty. In the three-point program which Dean Franklin D. Murphy<sup>2</sup> outlined for medical care in rural Kansas, the problem was stated in a statesmanlike manner and a proposed solution was offered. As this program is developed, you will place increased emphasis upon the art of obstetrics. Dr. Calkins and his splendid staff at the University of Kansas Medical Center can teach the science of obstetrics to undergraduate and graduate students and give them an insight into the art of obstetrics; but it takes a lifetime of living and practicing an art, any art, before one becomes an artist. I happen to know that Dean Murphy and Dr. Calkins are very much interested in short courses for practi-

tioners not only of a few days but also from two to four weeks. With the development of your program of decentralized teaching in obstetrics, there is no better place to start than with the undergraduate in the private office of a private practitioner, and no better subject than personalized pre-partum care. The private practitioner is and should be a teacher of better obstetrics. He can add the personal touch which is so necessary for the welfare of our patients and so vital to the American way of life. In Kansas you are integrating him into your program of medical education in a way that is inspirational to him and to his students. More power to you! Such efforts as you are making can only result in better medical care for the citizens of your state, and for the citizens of any state which will follow your example.

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## Rehabilitation of the Quadriceps\*

### American College of Surgeons

#### Committee on Trauma

"We are wasting a tremendous amount of money and manpower by treating a broken bone and letting a well man get sick physically and mentally while under our care. Then after the damage is done, we spend months, years, or a lifetime trying to bring him back to normal."

Dr. Robert H. Kennedy, chairman of the American College of Surgeons' Committee on Trauma, said this in May, 1941, and now can we honestly say that this statement is no longer true?

"Rehabilitation"—"Physical Restoration"—"Restorative Therapy"—"Third Phase of Medicine?"

The *name* is relatively immaterial but *to be conscious of its importance* in speeding recovery and to avail oneself of the facilities and methods available towards this end, *is* the important thing.

Great strides have been made in the techniques of the definitive treatment of trauma in the early stage, but can we say the same holds true during the convalescent stage?

World War II demonstrated conclusively that when only a portion of a man was damaged, serious deconditioning of the *whole* patient *could* be avoided by the early institution of preventive measures. Such

measures used were nothing new or difficult. It was merely that already well known, simple principles were systematically begun and carried out on the ward as soon as medically advisable and continued through convalescence to speed recovery. It does not seem reasonable nor good medical practice to discontinue such procedures now.

Rehabilitation does not require elaborate equipment in a large clinic. It does not mean hours of passive participation under a lamp or diathermy or days of non-productive, monotonous exercises. True rehabilitation begins at the bedside or in the clinic or office where the surgeon first directs his treatment toward the early functional restoration of the injured part. Sometimes it may mean the reassurance that an injury or illness is not serious and no special treatment is required. The surgeon must counsel, advise and instruct the patient, and both think and speak in terms of the patient's personal problems if rehabilitation is to have a firm foundation.

For example, often painstaking instruction is necessary by the surgeon in the proper use of cane or crutches. Most beginnings with each individual patient will be on a small scale and much of the restoration will be done by the patient in his own everyday environment. Only the more serious cases will

\*This is one of a series of articles on rehabilitation on a specific problem. The material was prepared by Leonard T. Peterson, M.D., Washington, D. C., who is a member of the Subcommittee on Rehabilitation, of which A. William Reggio, M.D., Medfield, Massachusetts, is chairman.



require special clinics or centers for their restoration.

The surgeon in charge cannot be absolved from the responsibility of doing all he personally can to prevent deconditioning and commence the work of restoration in spite of the possible lack of formal, ancillary restorative services at his hospital. Much can be done to get the patient in good condition and certain deformities, contractures, limitations of motion, atrophies of disuse, restricted functions, disturbed mental attitudes and warped outlook on life *can* be avoided or greatly reduced in most cases if the surgeon will inspire his assistants, residents or interns with the proper thinking and consciousness of their obligation to the patient.

Where the ancillary services of physical and occupational therapy *are* available, they are invaluable aids to attaining physical restoration if optimal use is made of them. To assure the best results they must be started early. Depending on the cases, restorative therapy may be started on the ward, in the clinic or office, always, of course, under the guidance and direction of the surgeon whose responsibility it is to be able to give that guidance and direction.

Excellent work is being done by the limited number of rehabilitation facilities available at present, and by earlier referral they could be helped more in returning the patient to employment even sooner. Delay between the time of injury and the commencing of restorative therapy frequently may be the main factor that will determine whether success or failure in restoring function is to be the result. When every physician caring for a traumatic case is fully conscious of the necessity to commence preventive and restorative therapy at the earliest possible moment after injury, the time lost by the patient from remunerative employment can be reduced.

It is the purpose of this release to be of assistance and guidance to all who assume the responsibility of caring for traumatic cases.

#### Rehabilitation of the Quadriceps

"But, doctor, my knees feel so weak." That is the most common complaint after illness. The weakness is not, of course, "in the knees" but of the quadriceps muscle. It may be said that physical rehabilitation begins with the quadriceps. The purpose of this release is to review the anatomy and function of this important mechanism in such a manner that it may serve for the instruction of medical personnel and patients.

The upright position of the body is maintained by the tonus of the antigravity muscles, essentially the gluteus maximus, quadriceps and gastrocnemius-soleus, without which the lower extremities tend to

collapse. The most important and most common site of instability is the knee joint. This joint is essentially a hinge which can collapse in only one direction, namely flexion, since lateral motion and extension are limited by the contour of the bones and the stability of the ligaments. Except for unusual factors such as hyperextension deformity or fibrous ankylosis, only the quadriceps muscle keeps the knee from giving away in flexion. In addition to maintaining the erect position, the quadriceps has the more active function of extending the knee in walking and of lifting the body weight in arising or climbing steps.

The quadriceps, as its name implies, is a composite muscle of four origins and a common insertion. Only the rectus femoris arises from the pelvis where it is attached by two heads in front of and above the acetabulum. The other three muscles, vestus lateralis, intermedius and medialis, arise from the lateral, anterior and medial aspects of the femur. The four muscles merge to form the quadriceps tendon, which contains the patella, and then continue on as the patellar tendon which inserts into the tibial tubercle. Except for the hip flexion produced by the rectus femoris, the action of the quadriceps is solely that of extending the knee; or, as indicated above, of keeping the knee in extension under load while the individual stands. With the knee in full extension the maximum effort is required for standing; therefore it is important that the angle of full extension be jealously guarded in all conditions where muscle power or joint motion might be lost. The nerve supply of the quadriceps is the femoral nerve, fortunately seldom subjected to injury, but unfortunately its cells of origin are often involved in diseases, particularly poliomyelitis.

Any illness or operation which confines a patient to bed leads to rapid atrophy, loss of tone, or deconditioning of the quadriceps. When walking is resumed there is, therefore, a lack of confidence and security best expressed as "weak in the knees." Ascending and, particularly, descending stairs require care or assistance. Elderly people may find it difficult to regain this lost strength and are prone to fall, and incur serious injuries. A few brief periods of daily exercise or reconditioning prevent this atrophy and provide a valuable safeguard. Exercises which are productive or competitive are more interesting, but the patient soon grasps the importance of these less interesting static "muscle setting" or active exercises. At the same time other muscles must participate and benefit by the exercises. Finally, the benefit to circulation and general nutrition should not be underestimated.

The strength of the quadriceps has direct relation to trauma or disease involving the knee joint. After severe trauma or surgery about the knee, the quadriceps suffers almost a complete temporary paralysis due to some reflex mechanism. Re-education and redevelopment of the muscle are the single most important part of rehabilitation after injury or surgery. Diseases such as arthritis cause atrophy of the quadriceps and frequently lead to flexion deformity because of this weakness as the flexors exert stronger pull than the quadriceps or extensor. The synovitis which follows an injury or disease often persists until the muscle has regained its strength. Unless active rehabilitation measures are taken the disability becomes chronic and even permanent.

What then can be done to preserve or regain the power of the quadriceps muscle? While physical rehabilitation has many other aspects, this subject is one of the most important and serves as a good starting point. Quadriceps training requires no special apparatus or skill. Let us itemize a few essential details.

1. The attending physician must bring rehabilitation to the bedside. He must be aware of its importance and be willing to devote a minute or two during his daily visit to the instruction of the patient.

2. The patient should be told that *he alone* can exercise his muscles. Massage or mechanical devices *cannot* develop strength. The impulse starts in his brain and follows the nerve pathway to the muscles. Strength is attained only by active exercise. Periods of instruction or clinic treatment are only training for the work the *patient* must perform between visits.

3. Factors limiting the intensity of exercise are essentially (a) pain and (b) fatigue. The patient seldom exercises beyond the limit of either, and he may safely exercise if he experiences neither excessive pain nor fatigue.

4. The knee should be in extension during most of the time while at rest. Especially after trauma or surgery involving the knee is this important. The patient who lies for even a day or two with his knee flexed over several pillows will have to spend considerable time and effort regaining extension.

5. Exercise should be started as soon as possible after the patient is confined to bed and within 24 hours after surgery or trauma.

6. Exercises may be classified as (a) static, (b) passive, (c) assistive, (d) active, and (e) resistive.

(a) Static exercise means contraction in situ, isometric contraction, or contraction without joint motion. It is performed with the knee *in extension*

by (1) pulling the patella up, (2) by pressing the knee down, or (3) by simulating the motion of lifting the heel off the bed.

(b) Passive exercise, which is motion carried out by the therapist, is not true exercise and is usually not indicated as there is no voluntary muscle contraction.

(c) Assistive exercise is active plus passive exercise, and is helpful in the early stages of rehabilitation.

(d) Active exercise is entirely voluntary contraction, usually against gravity only.

(e) Resistive exercise is voluntary contraction against manual or weight resistance.

Exercises—static, active, and resistive—are progressive in that order. A type of exercise which does not attain full knee extension is ordinarily too advanced and should not be used. For example, if the patient cannot hold the leg fully extended against the force of gravity, he should not attempt to lift the leg but should be limited to static exercise. If he cannot lift weights and fully extend the knee, he should be limited to active exercise with only the weight of the leg.

Exercise to be effective must be strong, intermittent, and interrupted by a brief period of relaxation so that the muscle may recover by receiving nutrition and oxygen, and by eliminating waste products. A muscle held in a prolonged state of contraction tends to fatigue and atrophy. The best method of relaxing a muscle is to contract the antagonist muscles or, in the case of the knee, to flex the knee slightly between each exercise. The patient is advised to perform a complete cycle "contract—hold—relax—rest" about eight times a minute. Thus in five minutes he can perform 40 complete cycles—a good goal *for every hour* while in bed or sitting up so as to get ready for walking.

After the patient can straighten the knee and hold the leg against the force of gravity, active exercise is indicated. He may lift the leg actively from the bed or, while sitting, actively flex and extend the knee over the edge of the bed or table—always to full extension. Finally, increasing resistance is added by weights attached to the foot. While repeated exercises develop endurance, strength is developed by a few exercises daily with the maximum weight which can be lifted effectively. Particular emphasis should be placed on development of the vastus medialis which contributes most to the last few degrees of knee extension.

In walking, with or without crutches, the knee should not be held stiffly in extension lest the muscle fatigue and atrophy. Walking with a passive pendulum motion at the knee does not develop



muscle strength. As the leg is moved forward the knee should flex slightly in order to relax the quadriceps. As the heel strikes the ground the quadriceps should contract in order to extend the knee fully and give the individual a secure gait. If the surgeon holds his hand on the patient's thigh

during a few practice steps, he will readily detect the quality of the muscular action and be able to prescribe corrective measures. Steps should be symmetrical in length and timing. A good motto for the convalescent patient undergoing quadriceps rehabilitation is "Every Step an Exercise."

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## BLUE SHIELD

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### Emphasis on Enrollment

Greater enrollment in Blue Cross-Blue Shield is the keynote for the coming 1951-52 enrollment season. The entire organization is being geared to the fall, winter and spring enrollment campaigns.

Perhaps the greatest single factor in the increased understanding of Blue Shield by the public and by the profession has been the fact that the Blue Shield enrollment has increased over 100 per cent in the past two years with a quarter of a million members now enrolled. More and more doctors are now participating actively in the program. The check on participation by doctors during 1950 reveals that out of some 1,450 participating physicians, 1,217 provided some service to Blue Shield members. This speaks for the fact that the Blue Shield enrollment is widely diffused throughout Kansas. This broad distribution of enrollment is due primarily to the community enrollment programs as practiced by Kansas Blue Cross-Blue Shield.

### Doctors' Cooperation Urged

A regular pattern of cooperation and support by the medical profession has been developed in Kansas in connection with the enrollment activity itself. As a prerequisite to any community enrollment effort, both the physicians and the hospital are asked to play a part. A recent example of this type of cooperation may be found in the community enrollment for the city of Coffeyville. The Blue Cross-Blue Shield enrollment representative first met with the hospital and with the doctors on the hospital staff and arranged for a follow-up meeting with all of the doctors in the city. Representatives from the physician relations program of the Topeka staff were called into this arranged meeting. Thus, it was possible at the meeting to discuss matters of interest to the doctors in connection with the program itself; that is, scope of benefits, fee allowances, income levels and similar points of information, as well as to discuss the part that might be played by the doctors in the enrollment activity. In this meeting at Coffeyville, the physicians asked the

question, "What does Blue Cross-Blue Shield want us to do in connection with the enrollment?" After considerable discussion this was the program which the doctors agreed upon.

1. Financing by the doctors of an advertisement endorsing Blue Cross-Blue Shield and urging consideration of the enrollment opportunity by the people of Coffeyville.

2. Distribution through monthly bills of an announcement card signed by the physicians. This card urged consideration of the enrollment opportunity.

3. Cooperation of medical assistants in serving as information points and in actual assistance in getting applications into the hands of patients.

4. Attendance by some representative of the medical profession at each of the meetings with volunteers. (In Coffeyville a careful schedule was worked out assigning a physician to each one of the planned meetings.)

The primary objective for participation by the medical profession in community enrollment is to establish as public information the fact that the profession itself endorses and supports Blue Cross-Blue Shield. It is increasingly important that the public be informed of the real interest of the profession in the program. Wherever this identification has been effective, the enrollment in the community also has been effective. The real underlying reason back of having a successful enrollment is not solely from the point of view of numbers of members enrolled. Deeper than this is the need of Blue Cross-Blue Shield to attract an average selection of health risk in the community. It is important to bear in mind that in making these programs available to entire communities without restrictions, health questionnaires or exclusions in the contract, Blue Cross and Blue Shield are still pioneering. The plans are working on the concept that to be of value to any community, they must be available to the community; that if we limit our activities only to preferred risk groups, we are not accomplishing the job which the medical profession wants us to accomplish. Thus, this broad experimentation with community enrollment. Thus, too, the seriousness with which physicians are urged to participate in an effort to make the program successful.

## PRESIDENT'S PAGE

Dear Doctor:

The material damage caused by the recent flood is known to have affected approximately 42,000 families. To some four per cent of these families came destruction of their homes; about 45 per cent of the total suffered major to minor damage, and to the remaining 50 to 51 per cent the flood inflicted less severe punishment. There of course is no measuring appliance to gauge or record the damage inflicted upon mind and body; yet we can reasonably assume that in this instance, like others of similar character, there was a sharp rise in ill health and a great demand for preventive medicine. Kansas medicine is proud to have demonstrated its being equal to these occasions. It is to be recognized that the profession in the affected areas was called upon to care for some 100,000 people who by no fault of their own found themselves in serious economic straits—and to my knowledge no family has sought medical care and failed.

These conditions and circumstances caused me to ask myself where and how can the members seek compensation during such disasters, with peak earning years so few, tax liability at its peak, and no means of equitable retirement fund per tax adjustment?

I began to look for some data. For the first I turned to my own federal income tax copies and their accompanying work figures and tables of 20 years ago and followed down through the years. After consultation with a tax attorney I received a copy of the speech by Senator I. M. Ives given July 25 past to the Senate urging an amendment to the Revenue Act of 1951. Then a few days later I received a complimentary copy from the Bureau of Medical Economics covering in minute detail a survey of physicians' income. I feel I found answers to the problem above recited.

It would appear that Senator Ives' amendment would eliminate the now alleged discrimination against certain groups, one of which is the independent practicing physician. I would like to briefly recap the data for your information and possible later consideration.

The doctor doesn't reach peak earnings for some approximate 15 to 18 years after starting practice and during this time, from practice alone, it is as a rule most difficult to produce much of an estate. Then when he reaches the peak years the tax liability becomes greatest, thus the net saving result isn't appreciably affected from former years of earning. The peak years are few; it is recorded the general practitioner enjoys his peak years at the age of 40 to 44 and the full time specialist reaches his at the age of 45 to 49. At the conclusion of his peak earning years he has consumed in excess of 50 per cent of his active practicing and working life and at no time has he been able or permitted to arrange his own personally financed retirement fund such as is permissible for the executive in business and other groups who can build their retirement fund and do it tax free (until they do retire). Moreover, they enjoy a longer working life in which to do it.

It would appear to me personally that should adjustments in taxes during the peak earning years be forthcoming, we could perform the charity in caring for our indigent and could meet disasters such as the recent flood and yet not be denied a right to attempt to provide per our own labors and savings a fund set aside for our old age obligations.

Always sincerely yours,

A handwritten signature in cursive script, reading "C. H. Benage". The signature is written in dark ink and is positioned at the bottom right of the page, below the typed name "C. H. Benage".



## EDITORIAL COMMENT

### Indigent Health Care

Following a report from the Board of Social Welfare on the dramatic increase in health care costs for indigents, the Kansas Medical Society began a thorough survey of this program. County societies have been requested to assist in supplying statistical data and the welfare board is offering its resources in providing necessary information. Upon completion, tabulations will be given to the county societies so they may compare their program with others in the state.

This survey will provide considerable information that is today lacking or only sketchily understood. Recorded will be an analysis of how each county program is operated, by contract, fee schedule, on an insurance basis or by the county physician plan. A sampling of fees charged and fees paid will indicate the rate of payment for services rendered.

The total indigent care cost will be compared with the health care cost in each county. Health costs will be divided among the various services showing the per cent of the total paid for hospital, drug and medical expenses. Usage rates will be established by dividing the total medical services into the total persons eligible for care and the doctor's average indigent care income will be obtained.

From this data the medical society and the welfare board will have a sounder basis on which to study this problem. Present information, with only 15 per cent of the counties recorded, already provides some interesting figures. There is, for instance, an indication that one-half the total health care cost is for hospitalization.

Another surprising indication is the high utilization rate among indigents. This figure needs a word of explanation but when properly defined presents, we believe, a valid comparison. Utilization is judged by dividing the total separate services rendered into the total persons eligible. It should be remembered that many services might be given to one person so, of course, on this basis the figure will be high. However, from reports currently received, this ranges from 35 per cent to 250 per cent utilization per month.

It appears at this time that the rate of payment for medical services is small, except in the less populated counties where the direct fee for service plans operate. In one county a year's average of all payments to doctors for all services rendered came to \$1.93 each.

In a meeting with hospital administrators and pharmacists it was learned that they too are providing services at a loss and that they feel this

cannot be continued at present rates. The present average per day cost for all Kansas hospitals, according to the standardized accounting system, is \$13.45. Pharmacists, filling prescriptions for indigents at cost plus a per cent that varies in different areas but averages about 25 per cent over cost, report they are losing money under such programs.

And yet the welfare board is of the impression that present expenses are higher than can be paid. Rough estimates indicate total welfare costs for the state to reach \$43,000,000 annually. Seven million, or one-sixth of the total (16 per cent) is for health care. About 70,000 Kansans are currently on relief. If those figures are correct, and they come from the welfare board, it costs about \$514 each year to provide one person with food, clothing and shelter and it costs \$100 to care for his illness.

Whether that figure is high or low we do not know at this time, but it will be determined accurately as the survey progresses. There are, however, a few things that are clear. Some factors were obvious before the survey began. These are intangibles, quite unrelated to statistics perhaps, but questions which the profession will decide as the future course of these programs is experienced.

There was a day when the physician treated indigents without charge. That loss was added to the fees of those able to pay. Today with charges becoming more standardized the loss in charity work is not readily absorbed elsewhere, so Kansas has toyed with low-rate assessments for indigent patients.

Some states have adopted flat rate fee schedules for service to all governmental agencies, making the same charges for indigent care as for veterans. Their theory is that medical service is a purchasable commodity and not worth less to one governmental agency than to another. The grocer does not offer food to the indigent family at a reduced cost, so why should medicine.

Another theory is that medical care is a service made available to all, regardless of their ability to pay.

The utilization rate is largely in the control of the case worker and the physician. Overall cost might be reduced if additional care was taken to certify only those persons actually in need of assistance, and by the doctor who will economize in the care given. The latter is difficult on the basis of what is good medical care because certainly the hospital provides infinitely better facilities than the average welfare patient's home. Hospital care also aids in conserving his time and reduces the net loss he suffers in attending the patient. So even this

thought, as simple as it appears on the surface, is filled with ponderous variables.

There is a fundamental question which will be determined one way or another. The medical profession should either perform this as charity for a needy class of persons or think in terms of contracting with the government for an obligation the government has assumed. On the former plan the savings will not be dramatic because other health services represent perhaps three-fourths the total cost. But if the second theory is pursued the cost will rise, bringing with it a corresponding tax increase.

Who knows which is the correct course? Perhaps the problem is even deeper than this. Consider governmental waste and the endless advance of federal paternalism. How can the infinitesimal doctor's broom sweep back that tide? And yet the philosophy of the welfare state will engulf us all unless somewhere someone moves to reverse the trend. Perhaps this is the opportunity.

Shall medicine bargain with government for fair wages and thereby present the public with a graphic picture of the true cost of government medicine? Shall the present sham of part payment and reduced fees be exposed and a realistic fee schedule adopted, or shall the medical back be turned on governmental aid for the sake of donating service to the individual needy person? It isn't an easy question—almost like asking whether medicine shall be a business or an art. That isn't so simple either.

### Physicians' Incomes

During the past months the United States Department of Commerce and the Bureau of Medical Economic Research of the American Medical Association cooperated to conduct a survey of physicians' incomes. This has been completed and published in the July 1951 issue of *Survey of Current Business*, and a lengthy review of that article appeared in the July 28, 1951, *Journal of the American Medical Association*. The following summary presents only a very few of the many statistical ideas contained in the article.

Approximately 42 per cent of the 55,000 physicians in the United States replied to the questionnaire, giving this survey the highest rate of response of any previous survey conducted by the United States Department of Commerce.

The average net income of all physicians before taxes in 1949 was \$11,058. Excluded only are interns, residents and teachers. Physicians whose major source of medical income was from private practice averaged \$11,858; salaried physicians, \$8,272. Full specialists had an average net income of \$15,014, of which neurological surgeons, with an

average income of \$28,628, had the highest with pathologists, \$22,284, and gynecologists, \$19,283, next in order. Physicians who were members of partnerships had a net income of \$17,722 as against \$10,895 for those practicing alone.

Interesting regional results were obtained. It was learned that on an average physicians in the far west earned the highest incomes, and the lowest was in the New England states. Considering all physicians, Minnesota, with an average of \$13,175, had the highest mean net income of any state. Considering only independent physicians, Arizona led the nation with \$15,599. Vermont, with an average income of \$7,527, Maine, Arkansas and Rhode Island were the states reporting the lowest average income. Kansas, with \$11,039, was almost exactly at the national average.

Interesting also is the fact that the largest average income was not reported in the largest cities. The smallest average mean net income, \$7,090, was reported in places having fewer than 1,000 residents. Incomes increased with the size of the city until a peak of \$12,766 was reached in cities of 250,000 to 500,000. From there on upwards the average income declined to \$10,021 in cities of a million or more. In other words, physicians practicing in cities of over a million had a smaller average income than physicians from any other city size except those below 25,000.

The article gives two sets of figures for most of the statistical tables. One is the mean average which is obtained by dividing the total income by the total persons. The other, often considered more accurate, is the median figure which represents the figure for the individual in the arithmetical center of the tabulation. In the case of figuring a median income, the figure represents the amount that is exactly in the middle, that there are the same number earning more and earning less. The median income of all physicians is \$8,835 before taxes. This is considerably lower than the average mean income. It may be of interest to know that .8 of one per cent of all physicians reported a net loss up to \$6,000; .1 of one per cent of all physicians reported an income from the practice of medicine of \$75,000, and over. The range of net incomes was from a loss of \$5,000 to a net profit of more than \$200,000. Gross incomes from the practice of medicine range from \$100 to \$550,000. About one in every 100 reported a net loss in 1949; one out of 14 made less than \$2,000 net income; almost one in four made less than \$5,000. At the other extreme, one in eight made over \$20,000 and one in 15 reported more than \$25,000.

For the first time since surveys of this type were conducted, the income of physicians is greater than that of dentists or lawyers. In 1929 lawyers



and physicians earned approximately the same incomes. In 1940 physicians were slightly behind lawyers, but since then the lawyers have dropped considerably behind. Non-salaried physicians have increased their mean net income from 1929 to 1949 by 125 per cent. Non-salaried lawyers in 1949 averaged \$8,083, an increase of 46 per cent. Dentists have had a lower median and mean net income all through the period. This difference is now more than 50 per cent greater. Their average increase of income since 1929 is 67 per cent.

Much more material is contained in this article which will be summarized in detail by Frank G. Dickinson, Ph.D., director of the Bureau of Medical Economic Research, in the *Journal of the American Medical Association*. Additional information also is available in the executive office of the Kansas Medical Society, should this be requested.

From the analysis made at this office, two findings of major importance appear to stand out. One is proof of the fact that a physician in a rural area with greatly reduced professional and living expenses can earn an income comparable to and perhaps exceeding that of physicians practicing in the major cities. The second is that while physicians' incomes have increased this has been at almost exactly the level of the average increased earnings of the population as a whole. Physicians' incomes increased at 108 per cent in the years between 1929 and 1949. The average income increase of all persons in the United States during that same period was 109 per cent.

### Medical Education Foundation

Some months ago the American Medical Association created a fund to aid medical schools. This fund, known as the American Medical Education Foundation, will be raised from voluntary donations either from the medical profession or from without. In July of this year the first grant of \$1,132,500 was given to the 79 medical schools in this nation.

The American Medical Education Foundation is sponsored by the medical profession of the United States. Fifty-three per cent of the donations have come from doctors and other medical sources. This is the medical profession's answer to those who claim that medical education cannot survive without federal aid. If \$1,000,000 or more each year can be contributed to this fund, the answer will be conclusive and one more threat of socialization will have been conquered.

All physicians are invited to give to this fund in any amounts they wish. All contributions will be acknowledged in the *Journal of the American Medical Association*, but the amount given will be withheld. Similarly contributions are gratefully

accepted from any other individual or organization who desires to make a tangible expression of his belief in the free enterprise system of medical care and medical education. Contributions should be sent to the American Medical Education Foundation, 535 North Dearborn Street, Chicago 10, Illinois. Mr. Russell F. Staudacher is the executive secretary, and on the board of directors are many physicians familiar to all. The names include such men as Dr. Elmer L. Henderson, past president of the American Medical Association and currently president of the foundation; Dr. Louis Bauer, president-elect of the American Medical Association; Dr. George F. Lull, secretary and general manager, etc.

### Acting Dean Appointed

Dr. Edward H. Hashinger, a member of the faculty of the University of Kansas School of Medicine for the past 30 years, has been named acting dean of the school to serve until a permanent appointment is made. Dr. Franklin D. Murphy, who resigned as dean to become chancellor of the university on September 1, reports that at present five major candidates are being considered for the position of dean and that an appointment will probably be made within three months.

Dr. Hashinger has played a leading role in the development of the university's postgraduate medical education program, which is one reason for his selection as acting dean. In that position he can assure continued coordination of the graduate program. As a member of the faculty he is professor of medicine and gerontology.

### Oklahoma City Clinical Meeting

The Oklahoma City Clinical Society, which had its beginning in 1930, will open its 21st annual four-day conference October 29, 1951. A large attendance is expected as Oklahoma City is centrally located and is rated third in the nation as a convention city.

The program will include lectures and discussions by 16 guest speakers from medical and teaching centers throughout the country, in addition to many Oklahoma City teachers and physicians. Dr. John W. Cline, president of the American Medical Association, will speak at the first banquet meeting, October 29.

In addition to general assemblies and panel discussions, there will be daily luncheon round table question and answer sessions and a clinical pathological conference. Entertainment will include dinner meetings, a dinner dance, and a stag smoker. Physicians who are members of the medical society of the county in which they reside are invited to attend.

## Case Reports from the University of Kansas Medical Center Tumor Conference\*

### Carcinoma of the Lung

Edited by R. E. Stowell, M.D., and D. M. Gibson, M.D.\*\*

Carcinoma of the bronchus is one of the most common types of cancer and is nearly nine times more frequent in men than in women. Recent advances in thoracic surgery have not given corresponding improvement in patient survivals because the tumor spread is too extensive by the time the diagnosis is made. These two cases, one of which is among the 10 per cent group of peripheral lung cancers, illustrate some of the problems frequently encountered in such patients.

#### Case No. 51-3

C. T., a 65-year-old white man, was admitted to the University of Kansas Medical Center on December 4, 1950, with a history of lung trouble with chronic cough most of his adult life. The cough became persistent one year before and in March, 1950, because of blood-streaked sputum he saw his local doctor, who treated him with antibiotics for virus pneumonia. Because of persistence of symptoms, he was bronchoscoped at this hospital, and stenosis of the right lower bronchus was seen. Bronchial washings contained no abnormal cells.

The patient's symptoms continued; he returned to this hospital in November, 1950, and another bronchoscopy was done. At this time a positive pathological diagnosis of squamous cell carcinoma was made. Since that time the patient has had a much more productive cough, with more hemoptysis. In the last several months he has had night sweats, dyspnea and fever. Weight loss in the last nine months has been 35 pounds. The blood pressure was 160/80 and only the physical findings of the chest were significant.

The patient was subjected to a right thoracotomy on December 6, 1950. The middle and lower lobes of the right lung were adherent and almost entirely replaced with tumor. The hilar vessels were adherent, with extension across the mediastinum to the left side. As the lesion was non-resectable, the incision was closed. The postoperative course was uneventful.

#### Case No. 51-4

C. N., a 56-year-old white man, was admitted here on November 22, 1950, with a history of cough of 15 years duration, which was productive of a slight amount of mucus. The cough was worse in

cold weather, was associated with frequent bouts of respiratory infection, and was accompanied by left chest pain. Since September, 1950, there had been several episodes of blood-streaked sputum. Because of the hemoptysis, he went to his local doctor, who found a tumor in the left chest by roentgen examination. The patient was working in a feed store and thought his coughing was due to dust. He had lost six pounds in weight in four months. There was diminution of breath sounds in the left base. Tuberculin and histoplasmin skin tests were negative.

Biopsy at bronchoscopy revealed the left lower bronchus to be filled with squamous cell carcinoma. On December 1, 1950, a left pneumonectomy was performed with a complete removal of the mediastinal nodes. The postoperative course was uneventful.

Dr. Tice: The roentgenograms of the chest on the first patient were unchanged during the months that we saw him, and present the picture of atelectasis of the base and middle lobe of the right lung. In a person of this age, the most likely diagnosis is a bronchial carcinoma, whereas in a child such a lesion would probably be due to a foreign body. Inflammatory changes, broncholiths and bronchial adenomas can produce atelectasis such as this, and bronchiectasis could produce the mottled peribronchial infiltration seen in this case.

The chest roentgenograms on the second patient reveal an unusual 12 cm. tumor mass, located peripherally in the lower lobe of the left lung (Figure 1). Originally I thought this lesion was probably a neurogenic tumor.

Dr. Helwig: The tissue obtained at bronchoscopy on the first patient was a fairly well differentiated squamous cell carcinoma.

The resected specimen from the second patient showed rather extensive squamous cell carcinoma involving chiefly the lower lobe of the left lung. The mediastinal lymph nodes did not show metastases.

Dr. Stowell: Dr. Johnson, will you comment on the etiology of lung tumors and the relationship of cigarette smoking to carcinoma of the bronchus. The type of cancer associated with tobacco smoking is said to be more frequently of the epidermoid than of the adenocarcinomatous type.

Dr. Johnson: I don't believe that cigarette smok-

\*Cancer teaching activities aided by a grant from the National Cancer Institute.

\*\*Trainee of the National Cancer Institute.



ing causes carcinoma. The etiology of carcinoma of the lung is as obscure as that of most cancers. There are a few recognized agents which apparently do increase the incidence of carcinoma of the lung in the general population. In the Schneeberg mining district of Germany, men exposed to certain radioactive ores show a high incidence of carcinoma of the lung.<sup>1</sup> More recent study indicates that there has been an apparent increase in carcinoma of the lung in nickel workers.<sup>1</sup>

The relation of cigarette smoking to carcinoma of the lung is still a debatable matter. I think the best publication on the subject is a recent one by Schreck and associates.<sup>2</sup> They state that there is a statistically significant increased incidence of cancer of the lung among cigarette smokers. However, carcinoma of the lung occurs in people who have never smoked a cigarette, which would suggest that tobacco is a weak carcinogen. Tobacco smoke alone probably cannot produce carcinoma of the lung; but it apparently can be a co-carcinogenic factor. The recently published evidence by Wynder and Graham<sup>3</sup> may not be statistically significant. They stated that a second article was to be published, in which the occupational and economic status of the patients would be shown to be unrelated to the cigarette smoking habit, thus implying that cigarette smoking is the important causal factor in lung carcinoma. In my opinion, cigarette smoking would probably vary considerably with the economic status and with the occupation of the individuals con-

cerned. One must await final judgment on their work until their second article is published.

Dr. Helwig: Several workers have produced carcinoma of the skin of mice by local application of tobacco tars. They are apparently weak carcinogenic agents, because only a small percentage of the animals actually developed cancer. Inasmuch as it is a known carcinogen, it is conceivable that over a period of 25 or 30 years of inhalation of tobacco tars that this might be a significant agent in the production of carcinoma of the bronchus. One can produce cancer of the lung with other known carcinogens, such as 1, 2, 5, 6-dibenzanthracene and methylcholanthrene by simply pulling a suture impregnated with these potent carcinogenic agents through the lungs.

Dr. Stowell: These two patients complained of cough for many years. What is the relationship of cough to carcinoma of the lung?

Dr. Orr: In a patient who has had a cough all of his life and then develops carcinoma, it is extremely difficult to determine when the carcinoma began. Carcinoma of the lung should be suspected in any patient in the cancer age group who develops a cough that persists longer than three or four weeks. Many of these carcinomas are asymptomatic in their early stages and can't be diagnosed until the patients begin to lose weight and develop secondary complications in the lung. An unexplained chronic cough in a man past 40 years of age should warrant

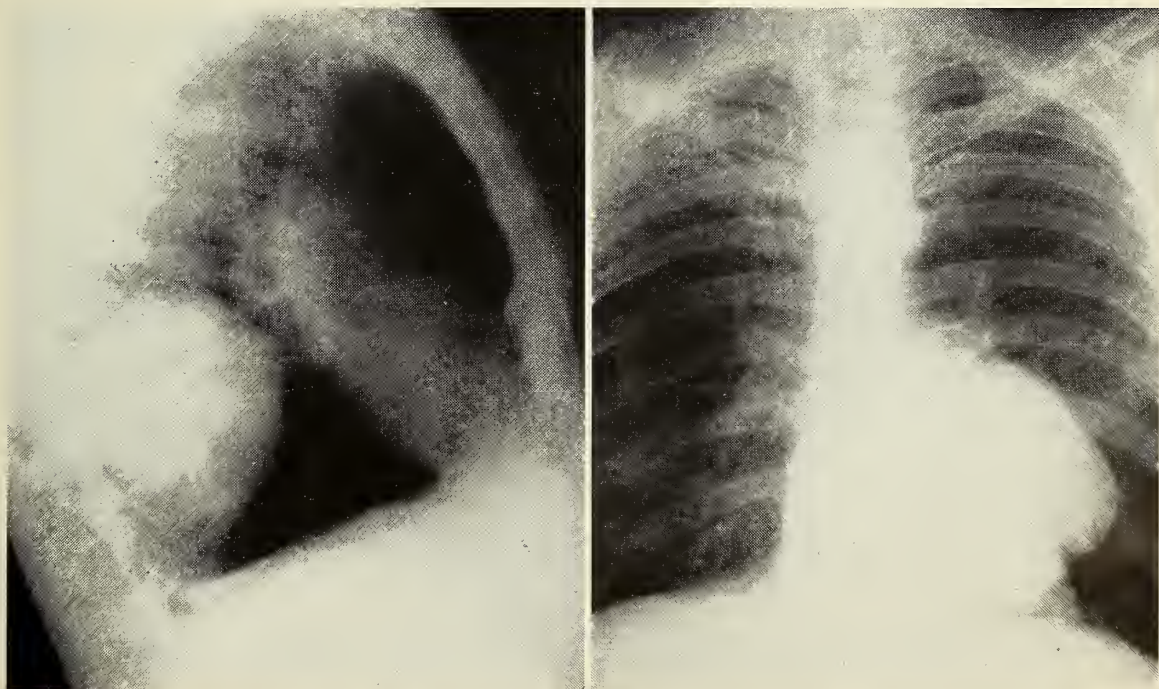


Figure 1. Lateral and posterior-anterior roentgenograms of chest of Case 51-4 showing tumor in base of left lung.

complete examination, including chest roentgenograms and bronchoscopic examination.

Dr. Stowell: It has been suggested that lung cancer could be diagnosed earlier if roentgenologic chest examinations were made on all adults. If the incidence of lung cancer is 16 cases per 100,000 per year, a roentgenologic survey for cancer of the lung alone would be prohibitively expensive. If one is looking for tuberculosis, lung cancer and other types of lung pathology, the results are much better.

Dr. Tice: Although we are trying primarily to find tuberculosis with the photofluorographic program that we have now, we are also recognizing malignancies. Obstructive emphysema and atelectasis are the two principal roentgenologic findings in carcinoma of the bronchus. With tuberculosis ruled out by numerous sputum examinations, there is a 50 per cent chance that cavitation in the lung in a person past 40 is due to a malignancy. The lamino-graph is of great value in diagnosing lung lesions.

Dr. Proud: Bronchoscopy is another one of several diagnostic procedures for lung cancer and although it certainly isn't accurate in all cases, in many instances the correct diagnosis can be made. Just because we are seeking a bronchial carcinoma does not necessarily mean that the tumor will be present in the bronchus in which one looks. It may be in one of the smaller radicals and be impossible to visualize. One indication of carcinoma is compression of the bronchus when the tumor is lying against its wall. When the neoplasm is visualized, biopsy is possible. Sometimes one can make a positive diagnosis by means of bronchial washings and cytologic study.

Dr. Schafer: Unfortunately many of the patients reach us at a time when the disease is too far advanced and complete resection of the tumor is not feasible. In those cases where resection is possible, often one doesn't succeed in eliminating the tumor from the patient. There are probably few reported groups of patients with higher than 5-10 per cent long term survival.

We are not going to improve our control of this disease until we have a better method for early diagnosis. Bronchoscopy is inadequate; the bronchoscopist is at a complete loss in over half of the patients whose tumor begins outside of his zone of vision, and of those patients who do ultimately present the tumor in the airways where it can be visualized the disease is too far advanced in many, as illustrated by the first patient. Bronchoscopy originally did not yield a positive specimen because the tumor had not become extensive enough to erode the main airways where it could be biopsied.

The radiologist can demonstrate the presence of

an abnormality in almost all cases of carcinoma of the lung. He usually sees the opacity of the tumor or the changes secondary to the tumor early in the course of the disease, but unfortunately he can't make a positive diagnosis. He can approach the point of guaranteeing that it's carcinoma, but he can't make that last step. Cytologic examination is unsatisfactory in the experience of many.

We can't wait for tomorrow or next year in managing the patients we're seeing today, which means that until such time as we have some better form of diagnosis we've got to change our viewpoint. When we cannot make a diagnosis of an obvious roentgenologic abnormality in a chest film, one has to entertain seriously the prospect of carrying out exploratory surgery to ascertain the nature of that abnormality. We have gone through the period where we carried out exploratory laparotomy under similar circumstances. We are now well into the period where an exploratory thoracotomy is almost our only diagnostic measure in a large number of patients with this serious disease. We have reached low morbidity and mortality rates with exploratory thoracotomy so that it compares favorably with exploratory laparotomy. Until we have better diagnostic measures, we must recommend it consistently.

The first patient, with the lesion in the right chest and the obstructive signs in the right lower lobe, probably had well advanced cancer 10 months ago; perhaps at that time his tumor would not have been resectable, but the chances of his being able to go 10 months and still remain resectable are poor. We were not optimistic about the possibility of being able to resect his lesion, and certainly a negative cytologic examination and a negative bronchoscopy in no way gives any assurance that the patient does not have carcinoma. In a man past 40 years with a minute peripheral opacity of the lung, where one cannot carry out bronchoscopy and where cytologic examination is negative, I would not want to assume the responsibility for giving any assurance that he didn't have a carcinoma. In numerous asymptomatic or nearly asymptomatic cases, small opacities have proven to be carcinoma of the lung.

Dr. Tice: One can conservatively say that 75 per cent of bronchial cancers are treated only for palliation. In the inoperable cases of carcinoma of the bronchus, when the patients have atelectasis or pain, why shouldn't they be given palliative roentgen therapy to relieve this pain, or possibly prolong their lives?

Dr. Schafer: I agree that those individuals who have bronchial obstruction or who have pain should be considered for radiation therapy, in the hope that



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the pain would diminish and that those with bronchial obstruction might get better aeration and be free of some of their signs of obstruction, with perhaps relief of their cough. Actually the largest number of our patients are inoperable because of extensive mediastinal infiltration and multiple node involvement in the mediastinum. We have not referred for radiation patients with diffuse tumor, either by direct extension or who have had tumor with multiple metastases, because usually their only symptom has been cough, for which little palliation would be obtained. Our major field for improved results in bronchial carcinoma, however, is in earlier diagnosis.

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## ACTIVITIES OF MEMBERS

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Dr. D. V. Conwell, Wichita, was guest speaker at a recent meeting of the Sedgwick County Medical Assistants' Society.

\* \* \*

Dr. E. E. Edwards, Allen, has opened an office in Emporia for afternoon practice. He will continue to practice in Allen each morning.

\* \* \*

Dr. A. N. Lemoine, Jr., chairman of the department of ophthalmology at the University of Kansas School of Medicine, was one of the guest lecturers at the Ophthalmological Study Course held in Portland, Maine, recently. He spoke on surgical anatomy and principles of the eye.

\* \* \*

Dr. Edward E. Long, who recently completed his internship at St. Margaret's Hospital, Kansas City, has opened an office for practice in Humboldt. He was graduated from the University of Kansas School of Medicine in 1950.

\* \* \*

Dr. C. Henry Murphy has resigned his position as assistant health officer at Wichita to become director of the city-county health department for Topeka and Shawnee County. In Topeka he succeeds Dr. Thomas R. Hood, who has been named secretary of the Kansas State Board of Health.

\* \* \*

Dr. Vernon J. Filley, formerly on the staff of the Santa Fe Hospital, Topeka, has opened an office in Dodge City and is practicing in association with Dr. R. J. Ohman.

Dr. H. Wallace Lane, El Dorado, was one of the speakers at the annual institute for teachers of Greenwood County held in Eureka during the second week in August.

\* \* \*

Dr. Joseph E. Gootee, Topeka, has been called to duty with the Air Force and is now stationed in Amarillo, Texas.

\* \* \*

Dr. Arch J. Brier, formerly of Topeka, is now practicing in Horton and is a member of the staff of the Horton Hospital and Clinic.

\* \* \*

Dr. Paul H. Lorhan, chairman of the section of anesthesiology at the University of Kansas Medical Center, addressed the International Anesthesiology Research Society at a meeting in London early this month. Later Dr. Lorhan will attend a congress of anesthesiologists in Paris.

\* \* \*

Dr. Glen E. Martin, Jr., who has been practicing in Paola during the past year, has announced plans to open an office in Goodland.

\* \* \*

Dr. Franklin D. Murphy, chancellor of the University of Kansas, and Dr. C. H. Benage of Pittsburg, president of the Kansas Medical Society, have been named to serve on a tri-state advisory committee for the second Crusade for Freedom in the United States.

\* \* \*

Dr. J. A. Burger, whose office in his home in Kansas City was badly damaged by the July flood, has established temporary offices in the Huron Building. He will move later to a building now being constructed in Shawnee and will practice in association with his son, Dr. P. B. Burger.

\* \* \*

Dr. Oliver L. Martin, Salina, spoke on socialized medicine before the Kiwanis Club in that city last month.

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### New Secretary for Board of Health

Dr. Thomas R. Hood, formerly health officer for Shawnee County and the city of Topeka, assumed his new duties as executive secretary of the Kansas State Board of Health on August 1, allowing Dr. Robert H. Riedel, who had accepted a temporary appointment to the position, to return to his regular work as director of the Division of Cancer Control.

Dr. Hood is a native Kansan. He received his medical degree from the University of Kansas School of Medicine, and later earned a master's degree in public health from Harvard. In addition to directing public health activities in Topeka, he has done work in that field in Douglas and Cowley counties.



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\*  
Hamblen, E. C.: Some Aspects  
of Sex Endocrinology  
in General Practice,  
North Carolina M. J.  
7:533 (Oct.) 1946.



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## Senior Thesis from the University of Kansas Medical School\*

### The Leukemias: Their Therapy and Prognosis

L. G. Agee, M.D.\*\*

Kansas City, Kansas

The leukemias form one of the most controversial, confused and poorly understood group of diseases in medicine. This confusion is encountered immediately in the study of the leukemias for no one seems to be able to give an adequate definition of them. As must follow, the field is surrounded by an indistinct border of diseases that are by one called leukemias, by another "related to leukemia" or "leukoid reactions."

I will be forced in discussing the leukemias to make a definition which is dogmatic and which will include only those clinical entities that are recognized by all hematologists and internists as leukemia. This leaves a large residue of diseases which have at one time or another been called leukemias or included in the same category as the leukemias, i.e. Hodgkin's disease, chloroma, lymphoma, multiple myeloma, et cetera.

A brief history of leukemia will quickly show that although leukemia has been recognized for only a short period of time, great strides have been made in the diagnosis and clinical picture of the disease, but practically no progress in therapy has been made.

It was first recognized clinically in 1839 by Barth, and the blood was observed microscopically by Donne at that time. Donne published the first description in 1844, followed quickly and independently by John Hughes Bennett of Edinburgh and Rudolph Virchow in Berlin in 1845. Barth, who first recognized leukemia as a clinical entity in a patient, didn't publish his findings until 1855. It remained for Virchow to give the disease its name "leukemia" from the observed postmortem fact that the blood was white. The first recognized case in a child was reported by Bierman in 1861. No knowledge as to the type of cells or a classification of leukemias was possible until Ehrlich in 1879 came forward with stains that would enable differentiation of the types of leucocytes.

From 1879 to 1902, more and more cases were being diagnosed and the clinical and hematological pictures were being filled in with great detail, but there was as yet no therapy capable of producing any effect on the disease.

In 1902, Pusey of Chicago announced the treatment of a case of chronic leukemia in an adult. He reported that the treatment was completely without effect. However, he continued trying increasingly large doses of roentgen rays and within the same year as his first failure reported a complete clinical remission of a case of chronic leukemia under roentgen therapy.

The leukemias that will be considered here may be defined as those diseases in which there is a disturbance in that portion of the hematopoietic system which supplies the leucocytes of the circulating blood and which may be acute or chronic, is progressive and is invariably fatal.

This is a nebulous and indefinite definition for so it must be, because leukemia has so many forms and so many stages of each form.

Before classifying the leukemias, I believe it is well to consider the current hypotheses as to its etiology.

There are at present two main theories as to etiology, (1) the neoplastic and (2) the infectious. The latter, I believe, can be briefly mentioned only for historical interest and the variety of arguments for it can be itemized briefly. They are as follows:

1. A condition called leukosis can be transmitted in birds by a filterable virus.
2. Leukemia produces a leucocytosis and fever like an infection and often comes on following an infection.
3. The highest incidence of leukemia occurs in children and the same is true of infectious diseases.

Although the neoplastic theory is a much more sophisticated theory, and a great deal of work has been done on it, the true etiology of the disease remains unknown. The phenomena supporting a neoplastic etiology are as follows:

1. The morphological characteristics of leukemic tissue are also common to neoplastic tissue.
2. It has the ability to invade the blood stream or to resist entering the blood stream.
3. It has the tendency to localize in different organs.
4. It has the ability to produce tumors or diffuse infiltrations.
5. The production of a secondary anemia and/or hemorrhagic diatheses.
6. Leukemia can be transmitted by injecting living, intact leukemic cells.

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\*Thesis written while the author was a senior student at the University of Kansas School of Medicine. Dr. Agee is now serving his internship at the University of Kansas Medical Center, Kansas City, Kansas.





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7. Leukemia can be produced by using leukemogenic compounds which in turn are carcinogenic. These include benzol, indole, methylchloranthine and benzpyrene.

There seems to be some relation to heredity and the incidence of leukemia. This is suggested by the observation in mice that certain strains become leukemic susceptible. Also a strain that is susceptible to one kind of leukemia may be completely resistant to an inoculum of another kind of leukemia. Study indicates that this is probably a conditionally dominant type of inheritance.

Another theory is that the leukemic cells are potentially neoplastic, i.e. inherited as a unit in a group of cells.

One other viewpoint that fits in with the first theory of heredity in leukemia breaks down into different pathways to explain transmissible and spontaneous leukemia. Transmissible leukemia is believed to be inherited as a dominant characteristic whereas spontaneous leukemia is explained on the basis of a single recessive gene plus an additional localization factor.

Interesting as the theories of etiology of the leukemias are, they as yet have failed to reveal the cause of leukemia and leave us still treating the disease empirically. Although the cause of all the leukemias is unknown, there are many kinds, and these kinds have many classifications. These classifications are based on the morphology of the dominant type of cell concerned in the disease. Classification serves more than the purpose of allowing an accurate diagnosis. It also indicates the type of therapy to which the leukemia will respond and the prognosis of the case. It is for this reason that it is worth while to devote considerable space to classification and the incidence of each kind.

The leukemias are first divided into acute and chronic. The chronic consist of:

Name	Per cent of total number
Chronic myelocytic leukemia.....	26.5
Lymphosarcoma cell leukemia.....	16.2
Chronic lymphogenous leukemia.....	15.8
Chronic myelomonocytic leukemia.....	4.4
Chronic histiomonocytic leukemia.....	3.2

The acute consist of:

Acute lymphoblastic .....	11.7
Acute myeloblastic .....	8.9
Acute myelomonocytic .....	8.5
Acute histiomonocytic .....	4.8

Under chronic myelocytic leukemia will also be considered erythro-leukemia, eosinophilic leukemia, basophilic and megakaryocytic leukemias.

The leukemias have a definite relation as to age and sex. Sixty to 79 per cent of acute leukemia occurs under the age of five years. The incidence is

greater in males than females except during the first year of life when the incidence in females is greater.

Acute myeloblastic leukemia is the most frequent after the age of 20 years. Acute monoblastic is the most frequent between the ages of 30 to 60 years.

Of the chronic leukemias, myelocytic leukemia is the most frequent up to the age of 60. Lymphocytic leukemia is the most frequently encountered type past the age of 60; rarely is it encountered before the age of 40.

Seventy per cent of lymphosarcoma cell leukemia occurs in males. The incidence in females is the same at almost any age; in males the incidence roughly parallels the incidence of lymphoblastic leukemia in children and lymphocytic leukemia in adults.

The symptoms of the chronic leukemias are practically the same. The differences occur in the blood picture and prognosis of the case. In general the onset is insidious and the earliest symptoms are those referable to the secondary anemia, i.e. weakness, pallor, dyspnea and palpitation. There may be a dull, dragging pain in the left upper quadrant due to a splenomegaly or there may be an actual bulging. Then there are the symptoms of an increased metabolic rate, i.e. weakness, cachexia, fever, weight loss. Later on the symptoms of anemia become marked and the patient begins to have hemorrhagic diatheses. Death usually occurs from an intercurrent infection or a hemorrhage.

It must be remembered that the chronic leukemias may become acute at any time and when this happens the picture is that of a rapidly fatal disease.

Generally the acute leukemias have the same pathology as the chronic except that the picture is much more rapid and intense. The course is usually less than a year from onset of symptoms to its invariable fatal termination.

Onset is usually abrupt, often coming on after an acute infection. The symptoms are fever, malaise, headache, generalized aches and pains and finally prostration. There are signs and symptoms of a rapidly increasing anemia and a severe bleeding tendency. There are often symptoms of oral infection; the spleen is moderately enlarged in two-thirds of the cases; the liver is usually slightly enlarged and lymph nodes may or may not be enlarged.

The similarity of the symptoms of the acute and chronic leukemias would lead one to suspect that since the primary difference seems to be in the length of the course of the disease, the therapy would be similar and vary perhaps only in degree.

This, however, is not verified by clinical experience. Chronic leukemias respond both to radiation and chemotherapy, whereas the acute leukemias respond not at all to radiation and it is in fact usually



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contraindicated. It has been just recently that any form of aid for the acute leukemias has been available, and this came in the form of metabolic alteratives or inhibitors.

Before discussing the therapy of the various kinds of leukemias separately, it is advantageous to set up the criteria by which a therapeutic agent is to be judged. The following would be the requirements of the perfect therapeutic agent for leukemia:

1. Hematologic Remission
  - (a) Leucocyte, hemoglobin, erythrocytes and platelet values return to normal.
  - (b) Immature leucocytes disappear from the blood stream.
  - (c) Bone marrow pattern return to normal.
2. Clinical Improvement
  - (a) Return of nodes, liver and spleen to normal size.
  - (b) Bleeding tendency disappears.
  - (c) Appetite, performance status, and subjective symptoms return to normal.
  - (d) Continuous improvement or repeated remissions must be obtained.
3. No drug fast state must be produced.
4. Lack of toxicity.

No treatment as yet can fill all of these criteria. But those agents that have proved most effective will be discussed.

In chronic leukemias, x-ray has been the best by far in the past and still continues to be the most valuable weapon in treatment.

The method of administration is the same in all types and the regimen most employed now consists of giving "intensive therapy." This means giving 100-150 r in single or divided doses using 200 kv. x 25 milliamperes, a 50 centimeter skin target distance with a filter of 0.5 millimeters of copper and one millimeter of aluminum. The body area may be treated by local treatment over spleen, nodes or involved viscus or by the "quadrant method." This divides the body into anterior and posterior chest and anterior and posterior abdomen. Once remission has been produced, many radiologists advocate periodic "spray" application when it is deemed necessary to give more x-ray.

The indications for roentgen therapy are the following:

1. Increasing anemia with erythrocyte count below 4,000,000 and/or hemoglobin below 70 per cent.
2. Enlarged spleen: x-ray directly over the spleen.
3. Loss of weight, fever and anorexia.
4. Large increase in leucocytes or immature forms.
5. Increasing fatigue.

6. Progressive enlargement of spleen, liver, nodes, or signs of leukemic infiltration.

7. Hemorrhagic tendencies.

How does roentgen therapy fit the criteria we have set up for the perfect anti-leukemic agent? The answer is that it will produce complete hematological and clinical remission in a large percentage of the chronic leukemias, but re-exacerbations occur which are increasingly resistant to roentgen therapy until finally it is without effect. The results of intensive roentgen therapy at the Simpson Memorial Institute of the University of Michigan revealed the following results:

REMISSIONS		
Type of Leukemia	good or excellent	unsatisfactory
Chronic myelogenous .....	90.4%	9.6%
Chronic lymphogenous .....	84.	16.
Chronic histiomonocytic ....	58.8	41.2
Lymphosarcoma cell .....	32.7	67.3

There are several contraindications to be observed in using roentgen therapy. These are:

1. Acute leukemia or acute exacerbations of chronic leukemia.
2. Leukopenia or hemorrhagic tendency.
3. If leucocytes count is more than 200,000 it should be stopped when count reaches 40,000; if initial count is less than 100,000, should stop when count reaches 25,000; if initial count is more than 20,000, should stop when count reaches 20,000.
4. Severe anemia.

In 1939 a new method for applying radiation therapy to the leukemias was found when it was discovered that radioactive phosphorus was selectively localized in leukemic tissue. Many believe that it is superior to x-ray because with it one achieves a localized radiation of the involved tissue, meaning that a higher radiation dose can be given. It acts over a period of time, whereas x-ray has to be given all at once. Also more can be given without the toxic effects that x-ray produces.

The preparations mostly used are  $P^{32}$ , the natural phosphorus atom, and  $P^{31}$ , the isotope. The absorption of  $P^{32}$  depends on bodily requirements, while the absorption of  $P^{31}$  has to be determined by giving tracer doses. The metabolism of the two in the body is the same. At first most of it is found in the viscera, but soon practically all of it is concentrated in the skeleton. The deposition in the various organs in decreasing order is bones, liver, stomach, small bowel, heart, kidney, lungs, muscle, skin and brain. The half life of  $P^{31}$  and  $P^{32}$  is about 14.3 days and their effects are negligible after the seventh half life. The active radiation is the beta particle which can penetrate about 2-4 millimeters of tissue.

The dose employed for adults is 2-2.5 millicuries





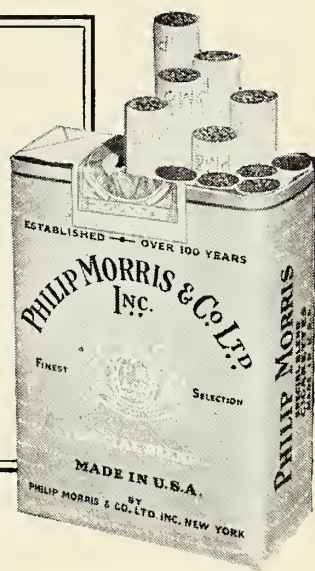
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given intravenously two to three times a week until a substantial effect appears on the blood and marrow.

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Toxic effects are not to be feared if care is used. They consist of bone marrow aplasia and pancytopenia when they occur.

Both roentgen therapy and radioactive phosphorus can be expected to prolong the life of the chronic leukemia patient about six to 24 months. Both x-ray and radioactive phosphorus are most effective in chronic myelocytic leukemia and next most effective in chronic lymphocytic leukemia.

Other agents that have been used for chronic leukemia and may produce some degree of remission in patients who no longer respond to radiation are urethane, nitrogen mustard, and arsenic.

Urethane (ethylcarbamate) was first reported in 1946. It had been used experimentally on leukemia in rats and found to produce:

1. Leukopenia
2. Inhibitions of lymphatic tissue similar to x-ray
3. Prolonged life expectancy
4. Fall in total number of immature leucocytes in blood and marrow.
5. Reduction in number of mitotic figures in bone marrow.

Its mode of action was believed to be either (1) a competitive inhibition interfering with the use of a natural amine in synthesis of nuclear protein or (2) an antagonist.

It is administered in crystalline form, gelatin capsules, enteric coated tablets or an aqueous solution. The dose is one to three grams daily until appreciable hematological response occurs, and then one to two grams daily as a maintenance dose.

The experimental results lead one to expect more than we actually see clinically. The individual tolerance to urethane varies greatly and toxic effects seem to be the rule rather than the exception. Nausea occurs in 50 per cent of the cases; vomiting, diarrhea, sweating and drowsiness are common signs of toxicity. With toxic doses there is a severe marrow depression with a pancytopenia.

There is a response similar to that of x-ray. Hematological response occurs within two to three days and this is followed by clinical improvement in 10 to 20 days. The hematological and clinical response seems to be due to arrested mitoses of the leukemic tissue.

Chronic myelogenous leukemia responds best to urethane although all of the chronic leukemias will respond to it. The difficulty lies in its great toxicity,

making it almost impossible to keep a patient on it for long periods of time.

Even in those patients who tolerate it the disease becomes drug fast and no longer responds.

The nitrogen mustards were first introduced in the treatment of leukemia in 1941. The two compounds most widely used are methylbis (B chlorethyl) amine,  $\text{HN}_2$ , and tris (B chlorethyl) amine,  $\text{HN}_3$ . Of these two,  $\text{HN}_3$  is the one most widely used. In the dry state they are very stable, but in solution are highly reactive. Their physiological activity is believed to be due to an intra-molecular cyclization in a polar solvent to form a cyclic onium cation. They are immediately cytotoxic producing (1) inhibition of mitosis, (2) chromosomal abnormalities, and (3) karyorrhexis of the nucleus.

The actions of the folic acid antagonists, A-methopterin, Aminopterin and Amino-an-fol, seem to be similar. Only the dosage varies. However, aminopterin seems to be the most effective and has received the largest clinical usage. The dosages are:

Amino-an-fol	25-50 mg. daily
Aminopterin	0.5-1.0 mg. daily
A-methopterin	3.0-5.0 mg. daily

The mode of action of these drugs is not known. It is believed they interfere with nuclear metabolism. The effect is either quantitative or quantitative and qualitative.

Toxic symptoms are not too much of a handicap under careful management, but are very severe when they occur. They consist of loss of weight, anorexia, alopecia, stomatitis, skin rash, abdominal distention and pain, diarrhea, severe melena, pancytopenia and bone marrow aplasia.

Individual tolerance to these drugs varies greatly. During the first weeks of therapy, daily blood counts should be performed, and even when the dosage has been established, weekly counts should be done to guard against the onset of a fatal pancytopenia and bone marrow aplasia.

Hematologic response occurs in four to seven days. After the leucocyte count falls to 2,000-3,000 cu. mm., bone marrow studies should be the guide to further therapy. Clinical remission begins in 10 to 21 days and lasts six to 52 weeks. About 46.6 per cent of acute myeloblastic and lymphoblastic leukemias get complete initial remissions, but repeated remissions are transient and unsatisfactory.

After surveying the various agents in use for the leukemias, we see that there are no agents capable of adequately handling the disease, but only in prolonging it; it is the physician's responsibility to give supportive therapy to keep the patient as well and comfortable as possible. These measures include:



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(1) diet, (2) treatment of anemia, (3) treatment of bleeding tendency, (4) control of infection.

(1). Diet is important because the elevated basal metabolic rate creates a great demand for protein, calories and vitamins. The great weight loss can be retarded if the patient can be maintained on a diet consisting of at least 125 grams of proteins and sufficient carbohydrates to maintain a 3,000 calorie intake daily. Fats do not seem to be well tolerated, perhaps due to impaired hepatic function.

(2). The treatment of the anemia of leukemia is a herculean task. Folic acid, iron, liver injections, vitamin B complex, vitamin B<sub>12</sub>, and crude yeast are all without effect on the anemia of leukemia. Although the anemia produced in leukemia is due to leukemia infiltration and toxic depression of the bone marrow, adequate protein, iron and vitamins (especially the B complex) should be included in the diet to eliminate the possibility of a nutritional anemia. The anemia usually improves concomitantly with remission of the leukemia. Most clinicians believe that blood transfusions should be given when the erythrocyte count falls below four million per cubic millimeter and/or the hemoglobin falls below 70 per cent. Blood transfusions seem to be the best if not the only treatment of the rapid anemias of acute leukemia or the acute phase of chronic leukemia. Even this will eventually fail to keep pace with the progressive anemia.

Hunter and Kierman have reported on 53 cases of leukemia in which splenectomies were performed, but the effect on the anemia was not very impressive.

(3). Control of the bleeding tendency follows along the same lines as for the control of anemia. Blood transfusions are the best treatment, but in acute cases practically all measures are without avail. Vitamin C is without any effect at all.

(4). The leukopenia that develops due to the course of the disease or to therapy predisposes to intercurrent infections. The patient during this crisis should be carefully protected from contact with infections and carried on antibiotics.

In summary, it is interesting to note that although there is no therapeutic agent capable of controlling leukemia, there are several agents in chronic leukemia capable of producing repeated hematological and clinical remissions and of prolonging life. These include roentgen therapy, radioactive phosphorus, nitrogen mustards, and urethane.

The fact that these agents are most effective in adults and in chronic leukemia is significant since 66.1 per cent of the leukemias fall in this group.

The acute leukemias so far have responded to any degree only to the folic acid antagonists and these

are ineffective in patients under the age of five years. This leaves a residue of 23.1 per cent of all the leukemias that at the present time have no therapeutic agent capable of producing any palliative effect.

The most favorable prognosis as to remissions with treatment and as to length of life is to be expected in those patients with chronic myelogenous and chronic lymphocytic leukemia.

The therapy of leukemia at present forms anything but a desirable picture, but the research going on has revealed several very interesting facts which suggest pathways that may lead to eventual control of this dread disease in the future. One of the most fascinating is the ability to produce immunity in leukemic susceptible rats by the following measures:

1. Inoculation with a sublethal dose of leukemic cells.
2. Injection of normal cells of certain genetic constitution.
3. Administration of heat killed leukemic cells.
4. Injection of ultracentrifuged leukemic cell extracts.
5. The injection of normal defibrinated blood.
6. Inoculation of animals with suspensions of liver and spleen of immune animals.

The thought of an immunization against leukemia is overwhelming and deserves and is getting intense investigation.

Another finding is that diets low in cystine lead to a decrease in carcinogenic leukemia in rats. This is stimulating research in the direction of metabolic disturbance as a cause of leukemia.

A finding that is especially timely because of the furor that is now going on in medicine due to the discovery of the adrenal cortical steroids, is the finding that the absence of the adrenal cortex in rats produces an increase in leukemic cell growth.

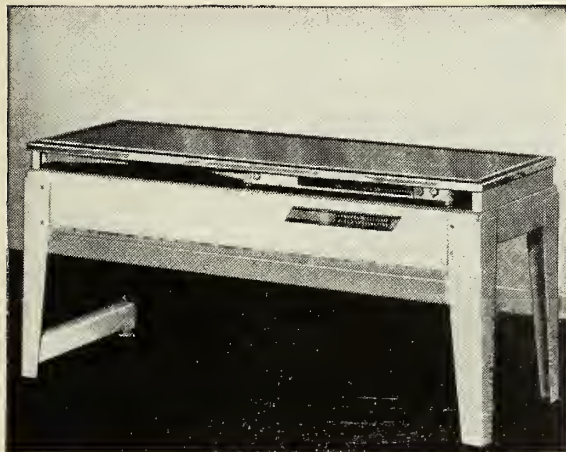
Recently clinical experiments in using ACTH and cortisone acetate in the treatment of leukemia have yielded the following results. Striking temporary shrinkage of enlarged lymph nodes, spleens and livers was produced in chronic lymphocytic leukemia, acute lymphocytic leukemia and acute granulocytic leukemia.

In the acute leukemias it was found to be effective on many cases that were folic acid antagonist fast.

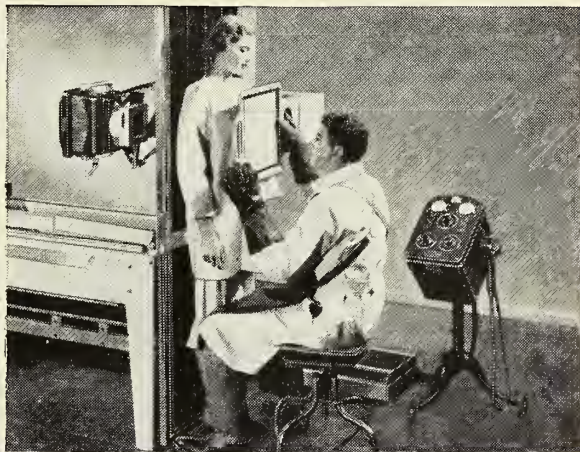
The dosage of ACTH used was 50-100 mg. daily in children and 100-200 mg. daily in adults. Cortisone acetate doses were 100-200 mg. daily in children and 200-400 mg. daily in adults. The improvement with these drugs is again only temporary, but it offers new hope and demands further investigation.



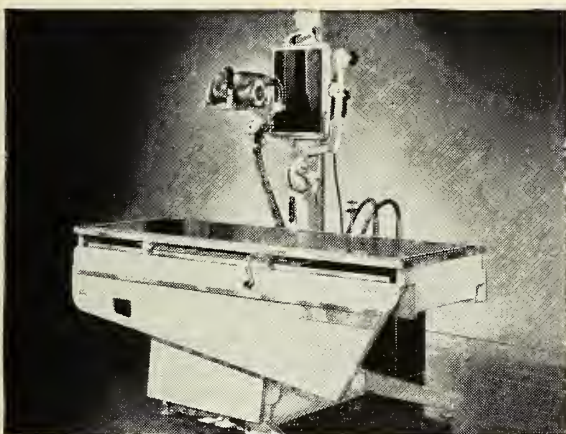
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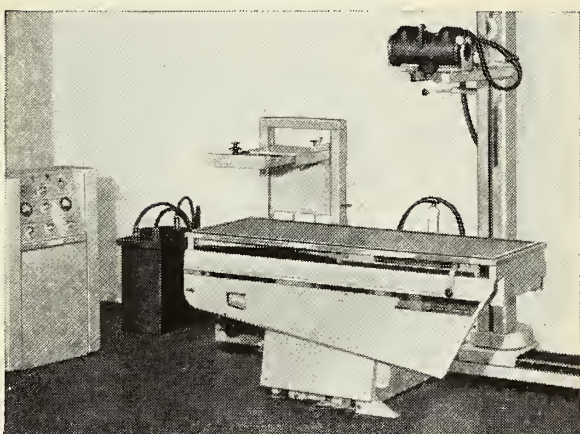
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"International Statistical Classification of Diseases, Injuries and Causes of Death."

Employment of the code will result in more comprehensive statistical records since it classifies both benign and malignant tumors according to histologic origin. Heretofore, most cancer death and incidence records have indicated only the body site of tumors.

Work on the manual has been in progress since 1948 under the direction of the American Cancer Society statistics committee. The practicality of the code was tested by coding experimentally more than 30,000 tumor histories and reports.

It is not too early to make plans for attending the 93rd annual session of the Kansas Medical Society. The meeting will be held in Kansas City, Kansas, April 27-May 1, 1952.

## CLASSIFIED ADVERTISEMENTS

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## DEATH NOTICES

SAMUEL MONTEITH MYERS, M.D.

Dr. S. M. Myers, 74, an active member of the Nemaha County Medical Society, was killed August 18 in an automobile accident at Fort Dodge, Iowa. Mrs. Myers died August 20 of injuries received in the accident, and joint funeral services were held at Corning on August 23.

Dr. Myers was graduated from Central Medical College of St. Joseph in 1896, and received his Kansas license in 1901. He practiced in Potter until World War I, after which he opened an office in Corning, where he continued to practice until his death.

\* \* \*

OLIVER JOHN CORBETT, M.D.

Dr. O. J. Corbett, 75, who had been practicing in Emporia since his graduation from the Louisville Medical College in 1903, died at his home there on August 24. He was an honorary member of the Lyon County Medical Society, and at one time had served as president of the group. He specialized in surgery and took postgraduate work at New York University and in Vienna. During World War I he served in the Army medical corps.

## Cancer Terminology Standardized

The first major attempt to clarify and standardize the complicated terminology of cancer has been made by the American Cancer Society. A book, "Manual of Tumor Nomenclature and Coding," has been issued for distribution to cancer clinics and registries, hospitals, health departments, medical schools, research centers, and individual pathologists, surgeons and statisticians.

Widespread use of the new code is expected since it will be used in conjunction with the American Medical Association's "Standard Nomenclature of Diseases" and the World Health Organization's



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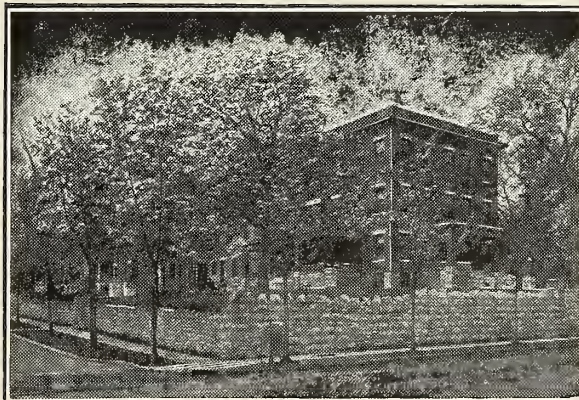
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## SOCIALIZED MEDICINE

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*This is the 22nd of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

President Truman recently issued a so-called peace offer on health insurance. This was followed by a detailed statement to the press by Oscar Ewing on the new proposal the administration is making for socialized medicine. At this time the bill has not been introduced, but it will be shortly and the points to be included have been made by Mr. Ewing in his press release.

The idea received its start about the middle of June when President Truman stated that he would give up his health insurance program if critics "will come up with a better proposal—or one that is almost as good." He then qualified these remarks by saying voluntary insurance programs were growing but that these plans "do not meet the problem." He added that 75,000,000 Americans have no health insurance at all. By implication this must mean that 75,000,000 Americans have health insurance, and we are of the opinion that this is not bad in view of the short period during which plans have been in effect.

Then on June 25 at a press conference Mr. Ewing detailed the plans for a new socialization program. He said in part, "I have called this press conference to announce that I am recommending that the President include in his legislative program a plan which would provide hospitalization insurance up to 60 days a year for persons 65 and older and dependents of deceased persons insured under the Old-Age and Survivors Insurance system . . .

"The full cost of these hospitalization benefits can be paid out of present social security payroll deductions; hence these do not need to be increased and no general tax money is required.

"In actual operation, the program would work very simply. When the physician of a person entitled to these benefits determined that he should be hospitalized, the doctor would, wherever possible, make the necessary arrangements. The patient could remain in the hospital so long as necessary up to 60 days in a year and the hospital costs would be paid directly to the hospital out of the insurance fund. Unfortunately, we cannot guarantee that every beneficiary needing hospitalization can be admitted to a hospital but if he is admitted the cost, to the extent indicated above, would be paid . . .

"By 1953 the program would cover approximately seven million people—and 1953 is about as soon as the program could be put in operation. The hospitalization insurance benefits would be available to (1) persons 65 and over (and their dependents) who are insured for retirement benefits under the existing law; and (2) widows under 65 with dependent children, and any other survivors, who are eligible to receive survivors' benefits under existing law . . .

"The cost of this hospitalization program for the first year is estimated at about \$200,000,000. A specific wage deduction to cover this cost would be less than two-tenths of one per cent per annum, one-tenth being paid by the employer and the other one-tenth by the employee. Such a small additional wage deduction is not practicable and is definitely not necessary, since the cost of this hospitalization is well within the financing arrangements now embodied in the social security program. This program already provides for a series of increases in contributions up to 1970, when they will be 6½ per cent.

"The proposed plan will furnish hospitalization insurance for large groups of people who cannot now, as a practical matter, obtain such insurance. Voluntary non-profit plans and commercial insurance companies, almost without exception, do not cover people 65 and over on the grounds of age or physical condition. The people under 65 who would be beneficiaries under the plan, by and large, cannot afford such insurance. For these reasons, the plan does not invade a field of substantial interest to private insurance, non-profit or commercial.

"The hospital services which would be provided under the plan are those services, drugs and appliances which the hospital customarily furnishes its bed-patients. Specifically excluded would be any medical care except such as is generally furnished by hospitals as an essential part of hospital care for bed-patients. The program would not cover hospitalization in a tuberculosis or mental institution or services provided by institutions like those which specialize in the care of chronic cases."

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For a sick man or woman disease is an acutely personal problem, but it is also a communal problem. And if the public is to cooperate with the medical profession in the treatment of disease in the individual it will, we believe, be able to do this more intelligently if it has some idea of the size of the problem to the nation at large. Tuberculosis is an obvious example. The medical profession is only too well aware of the personal tragedies that have been caused by the purveyors of quack remedies for such dangerous diseases as cancer.—*British Medical Journal, Editorial, March 17, 1951.*



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Karl J. Waggener, M.D.

Wendell T. Wingett, M.D.

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## ANNOUNCEMENTS

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The annual postgraduate course in diseases of the chest sponsored by the Council on Postgraduate Medical Education and the New York State Chapter of the American College of Chest Physicians will be held at the Hotel New Yorker, New York City, November 12-17. The course is open to all physicians, but the number of registrants will be limited so applications will be accepted in the order in which they are received. Tuition fee is \$50. Applications should be sent to the American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

\* \* \*

A forum on fundamental surgical problems, designed to bring out the best of what is new in surgery and give younger surgeons doing original work a chance to be heard, will be one of the highlights of the 37th Clinical Congress of the American College of Surgeons, San Francisco, November 5 through November 9. Dr. Owen H. Wangenstein, professor of surgery at the University of Minnesota Medical School, is forum chairman. A total of 151 reports on all phases of surgery will be presented.

\* \* \*

The American Dermatological Association is offering a prize of \$300 for the best essay submitted on original work, not previously published, relative to some fundamental aspect of dermatology or syphilology. Manuscripts are to be typed with double spacing and submitted in triplicate not later than December 1, 1951, to Dr. Louis A. Brunsting, 102-110 Second Avenue, Southwest, Rochester, Minnesota.

\* \* \*

The interim session of the American College of Chest Physicians will be held at the Ambassador Hotel, Los Angeles, December 2 and 3, 1951. A scientific session will be presented on December 2 by the California chapter, including round table luncheon discussions and an x-ray conference. The Board of Regents of the College will meet on December 3, as well as various councils and committees. Dr. Edward W. Hayes, Monrovia, California, is chairman of general arrangements, and Dr. Alfred Goldman, Beverly Hills, is chairman of the committee on scientific program.

\* \* \*

The office of the American Board of Obstetrics and Gynecology is now located in Cleveland. All communications should be addressed to Robert L. Faulkner, M.D., Secretary-Treasurer, 2105 Adelbert Road, Cleveland 6, Ohio.

The American Goiter Association is offering the Van Meter prize award of \$300 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. Essays may cover either clinical or research investigations and should not exceed 3,000 words in length. Typewritten double spaced copies, in duplicate, are to be sent to Dr. George C. Shivers, 100 East St. Vrain Street, Colorado Springs, Colorado, not later than March 1, 1952.

\* \* \*

The American College of Chest Physicians announces that an award of \$250 will be given annually for the best original contribution, preferably by a young investigator, on any phase relating to chest disease. Manuscripts submitted will become the property of the College and will be referred to the editorial board of *Diseases of the Chest* for consideration. Contestants are advised to study the format of the publication for information on length of articles accepted, style and arrangement of illustrations.

Five typewritten copies of the manuscript should be submitted to the executive office of the College, 112 East Chestnut Street, Chicago 11, not later than April 1, 1952. The only means of identification of the author or authors shall be a motto or other device on the title page, and a sealed envelope bearing the same motto on the outside, with name or names inside.

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### Replace Flood Damaged Products

Parke, Davis and Company has announced plans to replace without charge all Parke-Davis products damaged or destroyed by the July flood in retail drug stores throughout Missouri, Kansas and Oklahoma. Field representatives of the company are helping druggists take inventory of their stocks. Scores of stores in the area were damaged in varying degrees, and some were completely destroyed.

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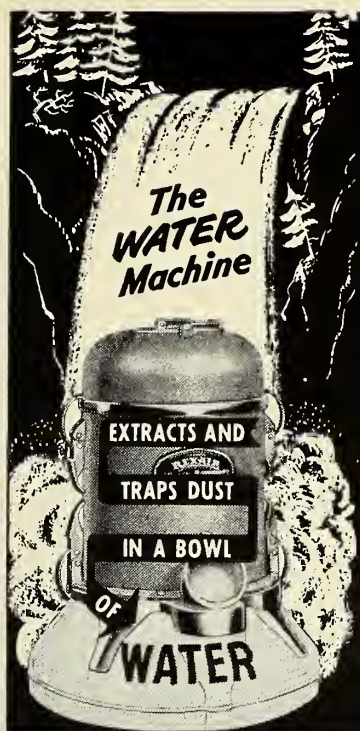
### Church Refutes Publicity

In order to refute an impression that a recent message from Pope Pius XII endorsed socialized medicine, the American Medical Association is publishing the text of the Vatican letter and an editorial which appeared in a recent issue of the *Tablet*, a Catholic publication in New York. The editorial concludes that the letter is far from being an approbation of socialized medicine and instead is a warning against such plans.

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## BOOK REVIEWS

*Hospital Staff and Office Manual.* By Radeusz M. Larkowski and Albert R. Rosanova. Published by Romaine Pierson, Inc., Long Island, New York. 428 pages, numerous illustrations, figures and tables. Price \$4.95.

This manual of medical technics and procedures is useful to the entire hospital and office staff. It covers all of the specialties concisely and effectively. —W.L.V.

\* \* \*

*Clinical Pediatric Urology.* By Meredith Campbell with assistance from Elvira Goettsch and John D. Lytle. Published by W. B. Saunders Company, Philadelphia, 1113 pages, 543 figures. Price \$18.

Dr. Campbell's book, *Pediatric Urology*, was published as a two-volume work in 1938, and it has been the definitive study in the field of pediatric urology. It is with great pleasure that we welcome this new revised one-volume edition. This volume is beautifully printed and illustrated, and has an invaluable bibliography at the end of each chapter. The operative procedures are well illustrated and up to date. Dr. Campbell's book remains as the classic in its field and is a valuable addition to the library of general practitioners as well as pediatricians and urologists. —W.L.V.

\* \* \*

*Surgical Forum, American College of Surgeons, October 1950 edition.* Published by W. B. Saunders Company, Philadelphia. 665 pages, 260 figures, 6 tables. Price \$10.

This publication contains all of the papers presented at last year's Surgical Forum on Fundamental Problems at the American College of Surgeons (Boston, October 1950). It is the first time that such a compilation has been attempted and as such it presents these articles many months before their publication in surgical journals.

The contents are divided into surgery of the lungs and esophagus; surgery of the stomach; surgery of the peritoneum, small and large bowel and pancreas; liver and bile ducts, portacaval anastomosis and kidney; cardiac surgery; blood vascular system and blood flow; neurosurgery; wounds and wound healing, tissue transplantation, antiseptics and antibiotics; water, electrolytes, protein, preoperative and postoperative care, fat metabolism, nutrition and skin preparation; blood transfusion, coagulation; shock and hemorrhage; malignancies and endocrines; and anesthesia.

The articles are concerned with current research on surgical problems. The individual papers are

brief (139 are presented in full, 45 are abstracted), but they contain the pertinent bibliography, photographs and illustrative charts.

The book is a marvelous collection of information summarizing contemporary surgical research. Not only is it a compendium of laboratory investigation in surgical problems, but it will serve as a stimulus to all who are fortunate enough to peruse it. It is hoped that this collection of papers will continue to appear each year as an annual volume. —C.F.K.

\* \* \*

*The Neuroses. Diagnosis and Management of Functional Disorders and Minor Psychoses.* By Walter C. Alvarez. Published by W. B. Saunders Company, Philadelphia. 667 pages. Price \$10.

The reviewer would like to praise this book highly and recommend it to all physicians. The points on which he would disagree are primarily of a technical nature, and it is felt better not to even mention them.

Dr. Alvarez has written a book which is practical, down-to-earth, and certain to be of enormous value to a non-psychiatrist physician. It is written in common language without complicated obscure terminology. The point of view is that of the internist, and Dr. Alvarez discusses common problems which plague the general practitioner and the internist. He gives very practical advice and information. The bibliography and index are excellent. In all, the reviewer can only be enthusiastic in reviewing this book. —M.J.

\* \* \*

*Clinical Heart Disease. Fourth Edition.* By Samuel A. Levine. Published by W. B. Saunders Company, Philadelphia. 556 pages, 192 figures. Price \$7.75.

The book is written in the same manner as the previous editions, namely a rather simple presentation of the subject of heart disease in, as the author says, a manner which would appeal to the general practitioner. In the past this book has appealed to the general practitioner and medical student. This text differs from the many others in the field which attempt to cover the entire subject expressing various opinions and furnishing large bibliographies. This book is one man's opinion presented in essay manner without too much discussion of the pros and cons of any given treatment or idea. The tremendous clinical experience of Dr. Levine guarantees that the book is founded on thorough information.

The second section of the book differs from those previous editions in that it is written by Dr. Harold Levine. This section is devoted entirely to electrocardiography and is approximately 200 pages



## AMERICAN BOARD EXAMINATIONS

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**Dermatology and Syphilology.** Sec., Dr. George M. Lewis, 66 East 66th St., New York 21. Written, Chicago, March 1952. Oral, Chicago, May 1952. Final date for filing, Feb. 1, 1952.

**Internal Medicine.** Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3. Written, various centers, Oct. 15.

**Obstetrics and Gynecology.** Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6. Oral, Chicago, June 7-13, 1952. Final date for filing, Feb. 1, 1952.

**Ophthalmology.** Sec. Dr. Ewin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine. Written, Feb. 4-5, 1952, 25 centers. Oral, Oct. 8-13, Chicago.

**Otolaryngology.** Sec., Dr. Dean M. Lierle, University Hospital, Iowa City. Oral, Chicago, Oct. 9-12.

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**Surgery.** Sec., Dr. J. Stewart Rodman, 225 South 15th St., Philadelphia. Written, various centers, March 1952. Final date for filing, Dec. 1, 1951.

**Thoracic Surgery.** Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit. Oral, St. Louis, Nov. 2, 1951.

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\* \* \*

*From A Doctor's Heart. By Eugene F. Snyder. Published by the Philosophical Library, New York. 251 pages, 18 illustrations. Price \$3.75.*

Dr. Snyder, himself a native of Russia and a survivor of the Russian revolution, has a rich background for an autobiography. The story is one of his own life, hardships, and philosophy.

He weaves his story about an acute coronary occlusion and the time he spent in the hospital. The discussions are those he had with his young son and are as diversified as any parent's conversation with his child might be. He vividly describes his prodromal symptoms and the hours of agony that followed the acute attack. Perhaps even more significant is the description of the specialists who cared for him and his own reaction to usual hospital care.

The book is more than the story of an infarction, it is the story of a man's struggle for life, career, and happiness. It is the story of the thoughtlessness people are guilty of at an hour of crisis. It is a story from a doctor's heart that should touch the heart of every physician and soften the heart of the specialist.—L.E.L.

### Kansas Licenses to 134

A total of 134 physicians received licenses to practice in Kansas recently, according to an announcement made by Dr. O. W. Davidson, Kansas City, secretary of the Kansas State Board of Medical Registration and Examination. Forty-six of the group were out-of-state applicants, the largest number of non-Kansans ever licensed at any one time.

Those who received licenses as the result of examinations given in June and the locations in which they intend to practice are: Dr. Loren Glenn Agee, Topeka; Dr. Bob Barcus Andrews, Bethel; Dr. Marvin Dale Atwood, Oswego; Dr. Benjamin William Barker, Winfield; Dr. Harlan Wilbur Berthelsen, Kansas City, Missouri; Dr. Robert Leonard Brenner, Jr., Kansas City; Dr. Russell Eugene Bridwell, Topeka; Dr. William Hobart Burch, Plains; Dr. Gordon Warren Burkey, Jr., Arkansas City; Dr. Enery Rudolph Calovich, Kansas City; Dr. William Gordon Chappuie, Kansas City; Dr. Dale Edward Clark, Cedar Vale; Dr. James Harold Coffman, El Dorado; Dr. Henry Franklin Coulter, Kansas City; Dr. Carl J. Cramm, Jr., Russell.

Dr. Dorothy Rose Danna, Tulsa; Dr. William Wade Dodson, Great Bend; Dr. Charles Winston

Dreher, Kansas City, Missouri; Dr. Peter D. Ens, Kansas City; Dr. Thomas Sinclair Evilsizer, Jr., Kansas City; Dr. Robert Eugene Feighny, Mission; Dr. Barton Lee Fischer, San Francisco; Dr. Virgil Earl Flanders, Mission; Dr. Robert Wayne Friggeri, Kansas City; Dr. Charles Mac Geyer, Topeka; Dr. Philip Merle Goering, Moundridge; Dr. John Armel Goo-gins, Topeka; Dr. William Andrew Granstedt, Sacramento; Dr. Arnold Hillel Greenhouse, Kansas City; Dr. Floyd Benedict Grillot, Parsons; Dr. Carl Christian Gunter, Kansas City, Missouri.

Dr. James Theo Hamilton, Wichita; Dr. Carey Appleton Hartenbower, Tonganoxie; Dr. William Pearce Hibbett, Kansas City; Dr. Herman William Hiesterman, Kansas City, Missouri; Dr. Edgar Donald Hinshaw, Kansas City; Dr. Marvin Homer Hird, Lawrence; Dr. Robert Bennett Hodgson, Mission; Dr. Melvin Vade Holman, Wichita; Dr. Robert Coburn Hull, Leavenworth.

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#### References:

- 1 Krantz, Kibler and Bell: "The Neutralization of Gastric Acidity with Basic Aluminum Aminoacetate," J. Pharmacol. and Exper. Therap., 82:247 (1944).
- 2 Paul, W. D., and Rhomberg, C.: "Medical Management of Uncomplicated Peptic Ulcer," J. Iowa M. Soc. 35:167-85 (1945).
- 3 Holbert, J. M., Noble, Nancy, and Grote, I. W.: J.A.Ph.A., Scientific Edition, 36:149 (1947).
- 4 Holbert, J. M., Noble, Nancy, and Grote, I. W.: J.A.Ph.A., Scientific Edition, 37:292-294 (1948).

#### TABLETS

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NORMAN F. MILLER, M.D., Professor of Obstetrics and Gynecology, and Head of Department, University of Michigan, Ann Arbor

JANET E. TOWNE, M.D., Associate Professor of Obstetrics and Gynecology, Stritch School of Medicine, Loyola University; Member Henry Schmitz Medical Foundation, Chicago

#### University of Kansas Faculty:

ROBERT L. NEWMAN, M.D., Associate Professor of Obstetrics and Gynecology

RUSSELL W. KERR, M.D., Instructor in Pathology

LEROY A. CALKINS, M.D., Professor of Obstetrics and Gynecology

#### Participants

DR. FERDINAND C. HELWIG, DR. RALPH H. MAJOR, DR. GALEN M. TICE, DR. WILLIAM P. WILLIAMSON, and DR. CALKINS

DR. EMGE, DR. MILLER and DR. CALKINS  
DR. EMGE, DR. TOWNE and DR. CALKINS

#### Subjects

The Evolution of the Estrogen-Cancer Hypothesis  
What Relation Does Estrogen Bear on Human Genital Cancer?  
Basic Requirements for Adequate Therapy of Genital Cancer  
The Meaning of Vaginal Bleeding in Older Women  
The Meaning and Significance of Noninvasive Cancer  
Pregnancy and Genital Cancer

Care of the Advanced Cancer Patient  
Diagnosis and Treatment of Carcinoma of the Endometrium

X-Ray and Radium in the Therapy of Cervical Cancer  
The Place of Surgery in the Treatment of Cervical Cancer

Carcinoma of the Ovary  
Carcinoma of the Vulva and Vagina  
The Papanicolaou Smear

Follow-up and Re-Treatment of Carcinoma of the Cervix  
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Functioning of the Cancer Clinic

Carcinoma of the Endometrium  
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Topeka; Dr. Jack W. Welch, Halstead; Dr. James Carey Pike, Kansas City.

The list of out-of-state physicians and their intended locations includes the following: Dr. John Martin Anderson, Topeka; Dr. Milton Henry Anderson, Osawatomie; Dr. William Wilchia Armistead, Jr., Wichita; Dr. Franklin Charles Behrle, Kansas City; Dr. Leopold Bellak, New York City; Dr. Hal Arthur Burnett, Parsons; Dr. Robert Francis Byrne, Liberal; Dr. William Harvey Crouch, Jr., Topeka; Dr. Edmunds Grey Dimond, Kansas City; Dr. Vewiser Leroy Dixon, Kansas City, Missouri; Dr. Frank Xavier Dwyer, Mission; Dr. Allen Jay Enelow, Topeka; Dr. Edward George Feldman, Topeka; Dr. Frederick Alpheus Gans, Webster Groves, Missouri; Dr. LeRoy Goodman, Kansas City, Missouri.

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## ABSTRACTS FROM CURRENT LITERATURE

### Diverticulitis of the Colon

*Diverticulitis of the Colon.* By Charles W. Mayo, *Post. Med.*, 8:5, 368-373, Nov. 1950.

In this paper presented November, 1949, before the meeting of the Interstate Postgraduate Medical Association, Dr. Mayo reviews 202 cases of diverticulitis over a ten year period, 1939-1948. Ten per cent of those over 50 years of age have diverticulitis. The author feels that there is a hereditary factor in connection with this condition and has noted that a good many patients have been obese at some period of their lives. Most patients can be treated satisfactorily, medically. Early diagnosis and prompt medical treatment are advised, rest and sedation, deep diathermy and hot stupes, antibiotics, fluids by mouth and vein. These minimize surgical intervention for most patients.

Symptoms in the 202 cases were noted as follows: obstruction, one-half of cases; abscess, one-fourth; fistulas, one-third; melena, eight per cent. Average duration was two years and two months.

In roentgenologic examination it is noted that diverticulitis practically always begins in the left side in the sigmoid and as time goes on the number of diverticula continues to increase and they ascend the colon. In discussing the accuracy of roentgenologic diagnosis the author points out that not all cases can be given a roentgenologic examination due to the acuteness of the situation and too much pressure should not be put on the bowel. A diagnosis was made of diverticulosis, diverticulitis, or obstruction of indeterminate origin in 94 per cent of the cases. The diagnosis of a lesion needing surgical intervention was accurate in 97 per cent. However, in 1.7 per cent of the cases a roentgenologic diagnosis of diverticulitis was made when actually the patients had carcinoma, so one must be cautious in such situations and be sure of the condition.

In discussing what he considers inadequate surgery the author points out that in the group of 202 cases there were seven cases in which exploration and closure only were carried out at the first operation. In four of these cases persistent fecal fistulas followed this procedure. Instead of exploration he believes transverse colostomy should be performed,

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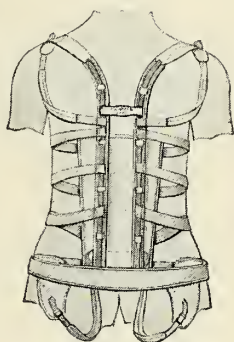
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followed later by resection or, if a right rectus incision is made and a growth is found on left side and is movable, he believes another incision should be made and either primary resection or an extra-peritoneal type of resection should be performed.

Twenty-six patients had drainage alone and 24 of these later had persistent fistulas. Therefore he believes colostomy should be performed on the transverse colon on all those cases at the time of drainage. In nine instances local closure of the fistulas was attempted and in two of the nine this procedure was successful. It is his belief that all of these patients should have had resection in multiple stages or more rarely primary anastomosis following the resection.—J.J.H.

\* \* \*

### Medical Management of Goiter

*Observations on the Prolonged Medical Management of Toxic Diffuse Goiter with Thiouracil and Propylthiouracil.* By Samuel U. Greenburg and Maurice Bruger, *Am. Jnl. Med. Sc.*, 220:4, 373-380, Oct. 1950.

These observations are based on studies over a five-year period. Thiouracil was first used, but propylthiouracil was substituted as the therapeutic agent in 1946. Cases treated were those of diffuse goiter with hyperthyroidism.

An adequate course of therapy was considered to be at least one year, using an initial dose sufficient

to bring the B.M.R. down to normal range, preferably to a minus level. Thereafter, a maintenance dose was given to hold the B.M.R. at that level. It was felt that a significant remission should extend for at least six months after discontinuing the drug, and preferably for a year or more.

Forty-seven patients received an adequate course of therapy. Eight of these failed to return for adequate observation. Of the remaining 39 patients, 64 per cent have had remission for over a year, and 77 per cent for over six months. Nine patients had recurrences, eight of which occurred within the first four months after stopping the drug. There were only five male cases in the series of 39. Four of these five had recurrences. Of the 34 female patients, only five had recurrences.

Three cases of granulocytopenia occurred with thiouracil; only one occurred with propylthiouracil. Pyridoxine hydrochloride appeared to act as a granulocytic stimulant in these and other patients with leukopenia.

Eighteen patients had thyrotoxic exophthalmos. No one instance of progression was noted during administration of propylthiouracil; nine receded partially or completely while under treatment.

In 13 of 27 cases, the thyroid gland decreased in size during propylthiouracil administration. In 12 cases, it did not change. Only in the remaining two was the gland enlarged during therapy.—E.J.R.

### Schedule of Postgraduate Courses at the UNIVERSITY OF KANSAS SCHOOL OF MEDICINE 1951-52

#### FOR MEDICAL PROFESSION

- Nov. 5-7 PSYCHOSOMATIC MEDICINE (at Winter V. A. Hospital, Topeka)
- Nov. 12-14 GYNECOLOGIC CANCER
- Dec. 10-12 PULMONARY PHYSIO-PATHOLOGY
- Jan. 21-25 SURGERY
- Jan. 28-30 PEDIATRICS
- Feb. 25-27 RADIOLOGY
- Mar. 10-15 ELECTROCARDIOGRAPHY
- Mar. 17-21 OPHTHALMOLOGY and OTOLARYNGOLOGY
- Mar. 24-26 GERIATRICS
- Apr. 14-16 ANESTHESIOLOGY

#### CONTINUATION TYPE COURSES

- Oct. 18-April 17 GENERAL PRACTICE (Afternoon and Evening session, 3rd Thursday of each month)
- Feb. & Mar. ROENTGENOLOGICAL PHYSICS (One session weekly, day and hours to be determined)
- Jan. 24-Feb. 28 DIAGNOSTIC UROLOGY (All-day program on Thursday—6 weeks)
- Mar. 20-April 24 DIAGNOSTIC X-RAY AND FLUOROSCOPY (All-day program on Thursday—6 weeks)

NOTE: An additional course covering a wide variety of subjects in medicine and surgery will be offered on the circuit plan in eight different centers throughout the state of Kansas. This course will be offered in afternoon and evening sessions at each center, once each month from December to May inclusive. It is open also to doctors of medicine in adjacent states who are conveniently located to any of these centers.

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Esophageal Surgery, One Week, starting October 15. Thoracic Surgery, One Week, starting October 8. Gallbladder Surgery, Ten Hours, starting October 22. Breast & Thyroid Surgery, One Week, starting October 1.

General Surgery, One Week, starting October 1. Fractures & Traumatic Surgery, Two Weeks, starting October 8.

**GYNECOLOGY**—Intensive Course, Two Weeks, starting September 24, October 22.

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## Head Pain as a Diagnostic Lead

Frequently the presence of head pain is overlooked. The physician learns of it only if he has made an effort to elicit the information. Since the etiology of the pain is the basis of rational management, the patient should be warned against taking medication before diagnosis is made.

Friedman<sup>1</sup> deplors the tendency to call any chronic recurring headache migraine. Careful history-taking and full physical and neurological examinations are essential for accurate diagnosis. A good starting point is a description of the headache — its character, laterality, frequency and intensity.<sup>2</sup>

The following chart gives briefly the primary diagnostic leads and treatment for the most common types of headache.

Etiology of Headache	Primary Diagnostic Data	Primary Therapy
Inflammatory e.g., Meningitis Abscess	Inflammation of intracranial structures; fever; leucocytosis; bacteriologic diag.	Specific: sulfonamides and antibiotics. Symptomatic: analgesics.
Tumor	Pain varies as spinal press. changes; skull X-ray.	Specific: surgery. Symptomatic, analgesics &/or hypnotics.
Sinusitis	Sinus congestion and infection; cloudy X-ray.	Specific: antibiotics and drainage. Symptomatic: analgesics.
Hypertensive	Hypertension present but pain not related to b.p. level; Dihydroergotamine relieves pain.	General hypertension therapy; sedation. Symptomatic: analgesics.
Migraine & other vascular headaches	Headache: recurrent, intense, throbbing. No organic causation; migraine in family; patient: energetic, perfectionist. Visual prodromata; g.i. upset during headache.	To abort attack: oral ergotamine plus caffeine.  General: adjustment to minimize nervous stress.

Data here tabulated is from: Wolf, G., Jr.,<sup>3</sup> and Friedman, A. P.<sup>4</sup>

Cecil<sup>5</sup> ranks vascular headaches, e.g., migraine and tension headaches, as the most commonly encountered of all. Because of their functional nature and usual recurrence at frequent intervals, they present a long-term therapeutic problem.

Therapy is conducted along two lines:

1) *Psychotherapy to reduce the frequency of attacks. This consists mainly of advice on emotional adjustment to stressful situations and guidance toward a good balance between work and relaxation.*

2) *Treatment of the distressing attack to prevent the usual period of incapacitation. Many investigators have reported that ergotamine preparations are effective for relief of the acute migraine attack in 80% of cases.<sup>1,6</sup> The drug is given immediately when an attack is approaching and dosage adjusted to the needs of the individual.*

1. Friedman, A. P. and von Storch, T.: 99th A.M.A. Session, June 1950. 2. Butler, S. and Hall, F.: M. Clin. N. Amer., p. 1459 (Sept.) 1949. 3. Wolf, G., Jr.: M. J. 34:25, 1951. 4. Friedman, A. P. and Conn, H. T.: Current Therapy, 1950, p. 563; Saunders Co., Phila. 5. Cecil, R. L.: A Textbook of Medicine, ed. 7, 1948, p. 1483; Saunders Co., Phila. 6. Horton, B. et al: Staff Meet. of Mayo Clinic 20:241, 1945.

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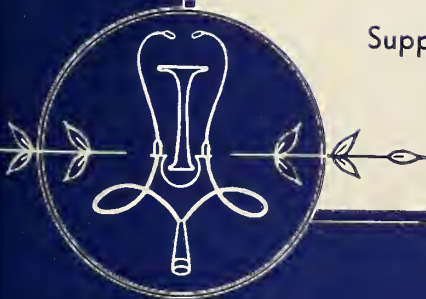
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Supplement, September, 1951

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## CANCER SUPPLEMENT

Through this supplemental issue of the Journal of the Kansas Medical Society, the Kansas Division of the American Cancer Society takes pleasure in presenting to the physicians of Kansas the proceedings of its Third Annual Mid-West Cancer Conference, held in Wichita, last January 18, 19, and 20. It follows in general the pattern of its two predecessors of 1949 and 1950.

There are deficiencies in this publication which are due to insurmountable obstacles. First, we have always the difficulty of revising manuscripts of talks to suit them for publication. That is always a problem of some magnitude, for statements or discussions which are entirely appropriate in an address frequently are equally inappropriate for publication. This often requires such extensive revision of recorded transcriptions as to amount to a rewriting of the entire article. Then, too, usually the addresses are profusely illustrated with slides, both black and white, and in color. That these add to the value of such a presentation is not questioned, but it is also recognized that it is not practical to reproduce all slides as used in such a presentation. Hence, the number of illustrations is sharply decreased as the articles are published. In this connection there will be found numerous references to "slides" in the text, when illustrations are not included in the publication. It is hoped that the readers will understand the reasons for these apparent inconsistencies and be tolerant of their omissions. In some cases revisions were going to be so extensive as to require complete rewriting of the transcription and there was not sufficient time on the part of the author to permit doing so within our publication deadline. This has made it necessary to omit or combine some papers which were presented at the meeting.

Due to these and other factors, it will be noted that Dr. Martin's two talks have been combined into one article; that only one of Dr. Pack's talks is reproduced; and that the address presented at the banquet by Dr. Lawrence is not published.

For these unavoidable deficiencies the Kansas Division of the American Cancer Society and the Editorial Board of the Journal of the Kansas Medical Society are genuinely sorry, but we hope and feel that each reader will find that the volume contains much valuable information, and that it will prove to be well worth the effort which has gone into its production. The Kansas Division is genuinely grateful for the courtesies extended by the Editorial Board in making this publication and its distribution possible as a part of its program of professional education in cancer.

## GUEST SPEAKERS

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**Charles L. Martin, M.D., Dallas, Texas**

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**Daniel G. Morton, M.D., Los Angeles, California**

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Clinical Professor of Surgery, New York Medical College; Attending Surgeon, Memorial Cancer Center.

**Danely P. Slaughter, M.D., Chicago, Illinois**

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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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## The Surgical Treatment of Cervical Cancer

Daniel G. Morton, M.D.

Los Angeles, California

In this dissertation on the surgical treatment of cervical cancer I hope to accomplish several things:

1. Dissuade all of you from having anything to do with it, except perhaps those few of you who are specially interested and equipped and have had a thorough training in pelvic surgery.

2. Persuade all of you that the treatment of cervical cancer in general is not something which should be undertaken by everyone. The job of those of us who are not especially prepared for this task should be to make accurate diagnoses as early as possible and if cancer is present to arrange for the patient's treatment by properly qualified persons as soon thereafter as feasible.

3. Assess for you the value of the various procedures now being carried out.

First of all, it is quite obvious that most patients with cervical cancer present themselves for treatment only after the growth has become quite extensive—certainly too extensive for effective surgical removal. In approximately 70 per cent of the cases the growth has extended well beyond the cervix at the time the patient is first seen. By and large these patients have an inoperable condition. In many other individuals, in whom the growth is relatively well confined to the cervix and thus suitable for operation from the point of view of anatomical extent, surgery is contraindicated by senility, obesity, cardiovascular or other disease. For these reasons, in the vast majority of cases of cervical cancer, irradiation remains the treatment of choice. In the minds of many authorities irradiation is the treatment of choice for all cases, and operation has no place whatsoever.

Within recent years there has been a renewal of interest in various operative procedures for cervical cancer, chiefly because of some of the drawbacks and complications of irradiation therapy. There has been a distressingly large number of late recurrences after irradiation treatment which has led to the feeling that actual removal of the cervix whenever pos-

sible would be an advantage. Cancer cannot recur in a cervix which is no longer present. Furthermore, irradiation has proven itself primarily ineffectual in certain cases, sometimes to destroy the local lesion and sometimes to affect metastases in the regional nodes. Since irradiation cannot be carried on indefinitely because of its destructive effects upon normal tissues, and because re-radiation is rarely successful, the only alternatives are surgical removal, or death from cancer.

First in importance among the operative procedures to be considered is the radical abdominal hysterectomy—or Wertheim operation. The object of this procedure is the removal of tubes, ovaries, the entire uterus, a wide portion of the parametrial connective tissue on each side, and several inches of the vaginal vault, in one bloc. The regional nodes on the lateral pelvic walls are also included. At one time this operation was accompanied by a 10 to 15 per cent surgical mortality. Today, with improved anesthesia, antibiotics, the free use of blood transfusion, and careful technical attention, the mortality should not exceed two per cent, and in some hands is less than one per cent.

The operation should be reserved for those cases in which the growth is confined to the cervix, and perhaps the immediately adjacent vaginal wall—in other words, Stage I cases (League of Nations Classification). The patient should be in good general condition, and not be obese; she should be relatively young. Elderly women with early cervical carcinomas should probably best be treated radiologically. Young women have a long life to look ahead to provided their cancers can be cured, and should be protected as much as possible from late recurrence. In my experience, only some 12 to 15 per cent of all patients presenting themselves for treatment are suitable for the Wertheim operation. One can expect to achieve a five-year survival rate of approximately 65 to 70 per cent. This figure will naturally be influenced by the proportion of very early cases included.

If we compare the results in surgically treated

cases (primary Wertheim operation) with those in radiologically treated cases of comparable extent, we find that the percentage of late recurrences (after five years) is much lower for the former than it is for the latter. Herein lies the chief advantage of the operation. The ability to remove the regional lymph nodes is probably largely responsible for this difference.

The chief complication of the Wertheim operation is injury to the urinary tract. Often the injury is not the result of direct trauma but of inevitable interference with the blood supply. Urinary fistulae will result in some 10 to 15 per cent of the cases. A few of these will be vesicovaginal fistulae; the majority will be ureterovaginal fistulae. The former may usually be repaired, while the latter often heal spontaneously, though occasionally with the loss of the kidney.

Here is a procedure then, which is suitable for a comparatively small number of early cases. It has distinct advantages over irradiation therapy, chiefly because of the fewer number of patients who develop late recurrences. It is, however, a comparatively formidable procedure. If mortality and complications are to be kept to the minimum, the operation should be performed only under ideal conditions and by those thoroughly competent to do so.

The Schauta operation is the radical vaginal operation by which the same local tissues are removed as by the Wertheim operation. It is impossible to remove the regional nodes through the vaginal approach, however. For this reason the Schauta operation has never been popular in this country. Its chief advantage over the Wertheim operation years ago was the lower primary mortality. Today the Schauta operation no longer enjoys this superiority. Recently Mitra, its chief advocate, has reported that he is now combining extraperitoneal lymphadenectomy of the regional nodes with the Schauta operation. No results will be available for several years.

The operation of pelvic lymphadenectomy deserves brief consideration. This procedure was popularized and championed by the late Dr. Frederick Taussig in 1930. His proposition was that in the early inoperable cases (Stage II, League of Nations), failure of irradiation frequently occurred, not because of the local cervical result which was often good, but because the regional nodes had already been invaded and irradiation failed to eradicate this spread. Upon the supposition that radium and/or roentgen irradiation was incapable of killing cancer when it has spread to the regional nodes, he attempted surgical removal of the susceptible nodes. His results seemed to show an improvement (about 15 per cent) when lymphadenectomy was carried out. We have tried out Taussig's idea and have not

been convinced of its value as a therapeutic procedure. These operations afforded us an opportunity, however, of comparing the incidence of node involvement in a series of cases in which the patient had received no roentgen therapy preoperatively with another series of cases in which the patient had been irradiated by means of roentgen rays before operation. We found that the incidence in the former group was approximately three times that of the latter group, indicating that roentgen irradiation may indeed destroy cancer in regional nodes, at least in some instances.

With the diagnosis of carcinoma-in-situ being made more and more frequently, the problem of its proper treatment has come to the fore—and so far the choice has generally been surgical. The most authoritative opinions favor simple total hysterectomy with or without removal of the ovaries, depending upon the age of the patient. It has not been considered inadvisable to leave ovaries in young women since metastasis to the ovary is rare even with full-blown cancer. Simple cervical resection has also been employed for carcinoma-in-situ, especially in very young women desirous of having children. Dr. Norman Miller champions this idea; he has allowed a number of such patients to undertake pregnancy, and so far has had no occasion to regret his decision.

The most difficult problem in connection with carcinoma-in-situ is not so much treatment, for actually almost any form of treatment is likely to be highly successful, but the diagnosis. Before deciding upon treatment which is less than full irradiation or the radical operation, one should be very certain that the growth is "in situ." This can usually be decided only by multiple biopsies or by a "cone" biopsy. There is danger in the other direction also, that is operating upon inconclusive evidence. The diagnosis of carcinoma-in-situ is being made rather freely these days, and often unjustifiably in my opinion. I believe that one should have several confirmatory opinions before accepting such a diagnosis.

Finally we come to the question of secondary operations. More often than we would like, irradiation fails, cancer recurs or persists after full cancer therapy. What can be done about it? As stated previously, one cannot simply continue to expose the affected areas to irradiation because the tissues can tolerate only so much—beyond this necrosis sets in. Reradiation in smaller doses has never proven effective. We have surgical removal or death as our only alternatives. Usually surgical removal is impossible also, but occasionally there is a chance of removing the invaded tissues, particularly if we are willing to sacrifice adjacent organs. Brunswick has championed this idea, as you know, and has shown



that it is possible to remove not only the whole uterus, adnexa, vagina, parametria and regional nodes, but also the bladder and rectum, and achieve good palliative results. Cures effected in this manner will be few and far between, but there will be some. Such operations, including less extensive modifications are associated with a very high primary mortality. They are expensive procedures, in terms of hospitalization, blood, antibiotics, complications and time. They are disappointing procedures, never to be undertaken lightly. Unquestionably, however, it is humane to undertake such procedures in

occasional cases. We should be as certain as possible that there is good likelihood of improving the patient's condition, rather than the opposite. We must also realize that we are going to be wrong many times and we will achieve only the prolongation and aggravation of agony.

The surgical treatment of cervical cancer occupies several important niches. No operative procedure is applicable to all cases, but on the other hand I believe that it is wrong to close one's eyes to the possible advantages of surgery where it is specially indicated.

## Therapy With Radioactive Isotopes\*

John H. Lawrence, M.D.

Berkeley, California

The therapeutic usefulness of any given radioactive compound is dependent on three major factors: the affinities of the isotope for a specific tissue, the length of its radioactive half-life, and the depth to which its radiation penetrates tissue. The human body is so sensitive to radiation that as little as five r of x-rays delivered to the whole body will slightly inhibit red cell formation so that in delivering radiation to neoplastic tissue, the normal tissues must be protected.

The capacity of radiation to inhibit the growth of living cells is the basis for its therapeutic use. In addition to the three factors outlined above, mechanical factors such as the location of the neoplasm, its size, the type of tissue which is invaded, and the rapidity of cell growth are important. Low-Beer, for example, has developed a method of treating skin cancer by pipetting radioactive phosphorus onto small pieces of blotting paper and placing them over the site of the skin carcinoma. Since the beta rays from P-32 penetrate a maximum of only eight millimeters of tissue, the radiation is limited to a superficial area and does not penetrate the deeper tissues as is the case when the gamma rays of radium or x-ray are used. He has treated about 1,000 patients by this method. From 5,000 to 10,000 equivalent roentgens of radiation are usually delivered to the lesion. In the first 500 patients, approximately 95 per cent have five-year cures. This is selective irradiation by means of topical application (lantern slides).

Radioactive iodine is being used very widely in the study, and diagnosis and treatment of Grave's disease, and within the next five years may well re-

place surgery in most instances of hyperthyroidism. Because several hundred times as much iodine goes to the thyroid as to normal tissues, when the iodine is taken orally, one or two doses of Iodine-131 with potencies of from two to eight millicuries in each dose bring about a disappearance of the symptoms and signs of hyperthyroidism. After 10 years' experience, there has been no evidence that Iodine-131 induces cancer in any of these patients as far as I am aware. Certainly, it is the treatment of choice in patients in whom surgery is contraindicated or in patients over the childbearing age. Autoradiographs and other studies prove that the parathyroids do not take up radioactive iodine, and that the isotope is limited almost exclusively to the thyroid gland (lantern slide).

A test of thyroid function with radioactive iodine is now being widely used throughout the country, and many believe that it is an even more reliable test of thyroid function than protein bound iodine in the blood or basal metabolic rate. It is often helpful in deciding whether a true hyperthyroidism is present. The test consists of the determination of Iodine-131 uptake in the gland 48 to 72 hours after administration of a tracer dose. High, normal and low uptakes are seen in hyperthyroidism, euthyroidism and hypothyroidism respectively.

Radioactive iodine is occasionally helpful in diagnosing metastatic tumors. One patient under our observation who had no evidence of a thyroid tumor had a bony metastasis in the right hip. Although the pathologist did not suspect thyroid carcinoma, the ratio of uptake of radioactive iodine in the anaplastic tumor to the uptake in normal tissue was approximately five to one. Even though no primary carcinoma could be found, the diagnosis of

\*This is a stenotypic transcription of the paper, presented with the aid of lantern slides.

thyroid carcinoma was thus established. The patient was subjected to a total thyroidectomy; the gland was sectioned; and a small carcinoma was found. At the end of two weeks a tracer dose of iodine was given. Marked uptake of iodine in the metastasis was found (lantern slide).

Treatment of thyroid cancer with radioactive iodine is less well established than treatment of hyperthyroidism. Large numbers of patients with metastatic thyroid cancer have, however, been treated since 1943. Although the end results are not yet available, sufficient evidence is present to indicate that persons who have metastatic thyroid cancer must certainly be studied with Iodine-131 and opportunity must be offered for therapy with this isotope if there is considerable concentration of the isotope. A small percentage of such patients will show uptake in the metastases when studied before ablation of the thyroid. A very large percentage of people who have thyroid carcinoma with metastases who do not take up iodine prior to thyroidectomy may develop uptake in the metastases afterwards. In therapy with Iodine-131, since one millicurie gives approximately one r whole body irradiation, excessive total body irradiation must be avoided. An instance of this danger is the case of a patient who was given over 500 millicuries of Iodine-131 over a period of six months. The red count and platelets dropped excessively before final recovery (lantern slide).

A patient with chronic myelogenous leukemia, on the other hand, is typical of many who have been carried for years with infrequent dosage of radioactive phosphorus, and in this case there is only slight localization of P-32 in bone marrow and in rapidly growing tissue. The red count remained high and the white cells were controlled satisfactorily. This patient developed a carcinoma in the fundus of the uterus in July, 1948, and a complete hysterectomy was performed. We are more concerned about the recurrence of carcinoma than about her leukemia; however, there has been no recurrence after a period of three years. This patient demonstrates the fact that the leukemic patient is certainly worth working with, and that some of them do exceedingly well.

Even childhood leukemia is not always hopeless. One of our patients, first seen at the age of 10, was treated with radioactive phosphorus from the beginning. Her white cells at that time numbered approximately 150,000. She was subsequently controlled with infrequent administration of P-32 for a period of 10 years (lantern slide).

Another patient, a woman in middle life, has lived 10 years with no treatment for her leukemia

since the original treatment in 1941. She has apparently acquired an immunity to the disease and may go on for many years without treatment. In the series of over 300 patients with chronic leukemia treated during the past 15 years, the average duration of life after onset is nearly seven years in the lymphatic and four in the myelogenous group, and most of the life duration is comfortable (lantern slide).

Polycythemia vera presents a striking contrast to the leukemias in that it can be easily controlled by the use of radioactive phosphorus. People with high red cell counts, high red cell volumes, and enlarged spleens show typically a fall in the red cells and volume to normal levels when treated with radioactive phosphorus. In most cases, two doses of the isotope bring the count into satisfactory control, and in some patients it remains normal for 10 or more years without further treatment. A typical case is a woman of 36 treated when she had a red cell count of seven and a half million. Following two doses of five millicuries each, the patient has remained in satisfactory control for a period of about six years. Another patient with the typical symptoms and signs of polycythemia was treated with three doses of two, five and six millicuries respectively. There has been no recurrence of the disease (lantern slides).

About 30 per cent of patients with polycythemia vera will show such a result, needing no treatment for over five years. Others will have to be retreated. The average retreatment interval in a group of 200 patients is three years.

Therapy by means of radioactive isotopes is now being combined with hormonal treatment. In chronic myelogenous leukemia, patients with the longest period of duration are women; the patients with longest life duration in chronic lymphatic leukemia are men. There is considerable evidence that hormonal treatment is having a beneficial effect, but figures are not yet available to substantiate this impression. The practitioner who sees a patient with leukemia should not consider the case hopeless; this disease is not nearly as serious as lung carcinoma, stomach carcinoma and many other carcinomas. Many of these patients will outlive the doctors taking care of them, for a large number of them will live six, seven, eight or 10 years, or more. Give these patients the benefit of therapy and good follow-up care; see them at regular intervals so that if infections occur they have the benefit of antibiotic therapy; arrange for radiation therapy—either x-ray or radioactive phosphorus. The important thing is to treat these people with the assumption they are going to live a long time, and you will find



that many of them will live long and fairly comfortably.

In polycythemia vera, in the approximately 200 patients we have treated during a 14-year experience, the life expectancy is near normal. The average age of onset is about 54 and the average age of death about 68. These patients can be controlled very nicely with radioactive phosphorus. There is no evidence of late effects, such as the induction of leukemia or other complications due to the use of the isotope.

Passing now to the use of radioactive cobalt in therapy, we observe that this substitute for radium is used in the treatment of pelvic tumors. Cobalt, made radioactive in the atomic pile, has a half-life of about four years. It emits beta and gamma rays with about the same energies as radium. Low-Beer, Myers and others have used small cobalt beads, introduced with a Foley catheter, for the treatment of papillomatosis of the bladder. No large series of patients has yet been studied and followed so that at this time it is possible to say only that this is a substitute for radium and one can expect no better results than are available from radium, but it should be useful in therapy. It is also being used in the form of a "bomb" for teleradium therapy.

An effort was made in our laboratory to ascertain the usefulness of stilbamidine in the treatment of multiple myeloma. Reid, Calvin and Tolbert synthesized this compound, building radioactive carbon into its structure. It was given to animals and to patients with multiple myeloma; although the uptake of stilbamidine was greater in the myeloma cells than in normal cells, the ratio was not great so it had no application in radiation therapy.

Another attempt in this direction has been made by Pressman in New York. He immunized a rabbit to rat kidney. The antibodies from the rabbit serum were iodinated with radioactive iodine and then injected into another rat. The antibodies localized in the kidney as seen in autoradiographs. Such selective localization may lead to the development of

an anti-cancer serum containing radioactive elements (lantern slide).

Fission particles travel only about one or two cell diameters in tissue. Based on this fact, the following experiments have been carried out by Tobias. A group of animals received some colloidal Uranium-235 intravenously. The colloid localized in the Kupffer cells of the liver. The animals were then shipped to Oak Ridge where they were placed in the atomic pile; fission was caused to take place in the atoms which were concentrated in the cells of the liver. A liver can thus be selectively damaged by the radiation. In a similar experiment, spleens were markedly damaged following their exposure to the pile. Although we do not intend to apply this method therapeutically, it is an interesting way to localize the energy of atomic fission within tissues.

Tobias also has been working with a very interesting new type of radiation which may eventually be applied to the surface of the body in the same way that x-rays and radium are applied. X-ray at the surface of the body has approximately twice the intensity as x-ray which has penetrated to a depth of 10 centimeters. High voltage deuterons from the 190-million volt cyclotron, on the contrary, give five times as great a depth dose at a depth of 15 centimeters as at the surface of tissue. Thus, for every roentgen delivered at the surface of the body, five roentgens are delivered to the depths. This energy can be directed with great accuracy: the pituitary body of a rat can be removed with a beam of this radiation. Carcinomas in animals have been irradiated experimentally by this method. It has interesting possibilities because it is possible to deliver much greater depth dosage to the tumor as compared to the skin dose (lantern slides).

Additional future applications of radioisotopes in therapy will depend upon our ability to find compounds containing them which will localize in the offending neoplastic tissue, and we may expect progress in this direction.



# Cancer and Allied Diseases in Children

Harold W. Dargeon, M. D.

New York, New York

It is a very great pleasure for me to have the opportunity of addressing you on one of the important problems in child health at the present time.

I would like to review briefly and rather broadly some of the aspects of this problem chiefly from the standpoints of diagnosis and etiology and show a few slides relating to the statistical incidence in the mortality figures in children.

As you know, we have witnessed in the last generation and certainly in the last decade a very dramatic and gratifying improvement in national child health. This has been due not alone to the use of the antibiotics and the sulfonamide compounds but to the broader application of many well known public health principles, pre-natal care of the mother, the delivery and post-natal care of the child. The former large group of killers of children is gradually being reduced and will be reduced further.

This has had the effect of giving us a larger population of individuals who will survive the hazards of fetal life, birth and post-natal life, and therefore assert intrinsic and some environmental problems which obviously they could not have if the diseases which previously took them off were still prevalent.

The deaths during the first year of life are still largely connected with diseases of fetal life, birth, and immediate post-natal life, such as congenital malformations, diarrhea of the newborn, various infections, etc.

After the first year, however, we begin to see the neoplastic group of diseases enter as an important factor in juvenile mortality. From the age of one to four in the particular group illustrated—1947—we find that neoplasms, and this includes histologically benign as well as malignant tumors and leukemias stood fourth among all the causes of death, and third among the diseases. Accidents are still the number one killer of American children after the first year of life.

In the five to nine year of age group, neoplasms stand first as the principal disease group. For the age 10 to 14 group, the same applies. Another point of importance from the standpoint of child health is that almost half of the deaths from these diseases in children occur during the first five years of life. A substantial portion of them, of course, are due to the leukemias; but another substantial portion of them could be salvaged if the

measures that we know even now could be utilized in all cases.

The difficulty, of course is after the first year of life, at which time the child generally receives quite adequate care, he is examined periodically by his physician, or in many areas, in public health centers, receiving his inoculations. But after the first year, he may not be examined again until he goes to school. Within this age period, there are a number of curable benign tumors and a number of curable malignant tumors, but because of the fact that the child is not examined they are missed and they will continue to be missed until we have greater supervision of the run-about preschool age group.

**Etiology.** We of course don't know the cause of children's cancer any more than we know the cause of adult tumors, but we know something about some causative factors which are worth while recalling. The osteochondromas, and several other types of tumors, have a well known familial basis.

Neurofibromatosis has been known for many many years to have a strong familial tendency. This little girl (slide) has cafe au lait spots on the arm and a neurofibroma in the orbit.

Retinoblastoma, glioma of the retina, is known also in many cases to have a familial tendency, if not direct hereditary trait. Most all of the reported series of this tumor, which is a highly malignant one, have shown at least in a few instances parental disease as well as disease in the child. These (slide) are two little girls, the father of whom had retinoblastoma. They both have bilateral retinoblastoma.

Xeroderma pigmentosa has also been known for some time to have a trait associated with consanguinity.

Another possibility, presumably very rare, is transmission of the tumor, the maternal tumor, by direct extension into the placenta and then into the fetus. This child's mother (slide) had a nevus of the thigh known from early girlhood. When she was 18 it was noted that it had enlarged, her physician excised it and the biopsy showed malignant melanoma. She was married several years later. During her pregnancy her inguinal nodes enlarged, they were excised and malignant melanoma was present, and she went down hill very rapidly and had a Cesarean section before term. She expired several days later with very widespread malignant melanomatosis.



This patient's child at the age of seven months developed a weakness on the left side of its face and a discharge from the left ear. His physician, who was very much alert to the possibilities, had a biopsy taken immediately of some granulations in the external auditory canal which was diagnosed as malignant tissue, exact nature undetermined. Shortly after that he developed a nodule behind his ear, and biopsy of that showed malignant melanoma. He was sent to us, and he had a little melanomatous area behind the operative scar. He died four months later with melanoma in his lungs and an extensive melanoma in the liver. Whether or not this placental transmission could apply in numbers of cases, of course, we don't know.

It is an interesting possibility, however, knowing that influences act in adults to bring into clinical evidence certain diseases which have been present in the fetus, such as the ovarian dermoid cyst.

Another possibility for disease, of course, is development of cancer from irradiation. This can occur in the child as well as in the adult. This (slide) is a boy, a patient of Dr. George Pack, who was irradiated for an enlarged thymic gland as an infant. He was irradiated in a very good institution, and presumably the dose which was given, that is 600 roentgens, was not in the carcinogenic level. This boy had multiple basal cell carcinomas of the skin at the age of six.

Most of the tumors of children are congenital, certainly those seen in the first four or five years of life. They are therefore diseases of the fetus, and it is rather interesting that certain of them make themselves evident shortly after birth; others take a certain period to assert themselves. The very common one illustrated here (slide) is the hemangioma. They are seldom seen immediately at birth, most of them occurring in the first six months of life, as you know, and they are seldom seen after the second year of life. A very large portion of them regress spontaneously, and I believe from the standpoint of management this has to be taken into consideration. Certainly a child who has a hemangioma early in life which is cosmetically unpleasant, or functionally difficult, such as around the eye, around the lip, mouth, or the nares, the anus, or the vulva, should be treated quite promptly. If any one elects to observe other types, one really must observe them and observe them frequently. Just because a certain group of them regress spontaneously, one cannot determine at first examination—particularly in the early weeks of life—which category that particular tumor falls into.

Now the sites in which the tumors occur in children are rather different, as far as frequency goes,

than the sites in which they occur in the adult. You are well aware of the common sites in the adult, but instead of the gastrointestinal tract, prostate, the pelvic organs, and breasts, we have other sites in which the tumors of frequent occurrence are found in the child.

These are the intracranial type, tumors of the orbit, tumors of the bone, tumors of the blood forming organs, tumors of the kidney, in which the outstanding one, of course, is the embryonal adenomyosarcoma or the Wilms' tumor, and those of the soft parts.

From the standpoint of clinical diagnosis, I think that we should consider that many of these areas are sites in which signs become present relatively soon. There is no such thing, obviously, as an early diagnosis in childhood cancer. Any tumor which has started in the fetus has had a chance to develop pre-natally for months, and unless it asserts itself very promptly after birth, as most of them don't, it has existed for months or maybe even years before symptoms present. Therefore, the earliest time we can make a clinical diagnosis is a moderately advanced or late diagnosis from the standpoint of the actual life of the tumor. When these orbital tumors do assert themselves they show quite evidently around the eye, as the illustration of the boy with the retinoblastoma demonstrated, with disturbance in the pupil and a defect in the vision. Intracranial lesions give rise usually to increased intracranial pressure and sensory and motor disturbances, and because a good many of them are situated in the posterior fossa, cerebellar disturbances frequently occur.

Tumors of the soft parts are quite difficult to differentiate but they generally follow a pattern. Swellings and lumps in the soft parts of a child are daily occurrences, but they usually go away. They go away unless there is something strange about them. When they do not go away they should be suspect, and they should be investigated.

Tumors of the marrow or the blood forming organs are generally indicated by anemias, peculiar anemias, or by other symptoms which we will discuss in another minute on the question of leukemia.

Tumors of the bones very frequently cause pain early. Children are not complaining individuals, as you know. They have to be prostrated, they have to be really suppressed even when they are sick in order to hold them down.

Tumors of the kidney. The Wilms' tumors, as you know, occur chiefly in the first few years of life when the mother is attending to the child very diligently. A great many mothers are discerning enough to palpate the baby's abdomen frequently

during bathing or changing diapers, even up to the age of two, but by that time they frequently escape close supervision.

I know of no exact way at the present time by observation alone or by palpation to make a differential diagnosis in every case of soft part subcutaneous swellings. Decisions regarding management are at times difficult. One doesn't like to recommend surgery around the face, around the neck or any other site where cosmetic possibilities have to be taken into consideration, but the cost of neglecting a soft part malignant tumor certainly has to be balanced against the cosmetic result.

Again, hemangiomas for example are histologically benign, and I think the general approach to the care of the child with a neoplasm, from the public health standpoint or the laymen's standpoint, should not be decided solely by whether it is histologically benign or malignant. We know very well that a very large number of people succumb from histologically benign tumors. But, to the layman, the word benign connotes safety. It doesn't mean what it means to us, and we should realize that when we discuss the subject with the layman.

Here (slide) is a child who has multiple histologically benign hemangiomas, showing subcutaneous nodules on the scalp and a nodule in the abdomen. That child succumbed of multiple hemorrhages from her benign tumor.

Lymphangiomas also are benign. They occur sometimes as small cysts which one sees on the tongue. They may be infiltrating in the soft parts around the face. A good many of them do occur in this area. One of the common types is the cystic hygroma which may be a single or multiloculated cyst. They may become infiltrating with diffuse lymphangiomatosis such as this little girl of five (slide) has had since birth. Here again we have a so-called benign tumor with a very serious prognosis in many instances.

Now, from the standpoint of diagnosis. How can we make an early diagnosis? I believe it is necessary in children, as well as in adults, to weigh not only the frequent possibilities in the diagnosis and the differential diagnosis but also the necessity of emergency intervention if anything else except the more frequent possibility presents.

Note the difficulties of making a diagnosis of leukemia illustrated here. There may be anemias; we may have weakness, we may have swellings—these infiltrations in various sites. Lymphadenopathy from acute infections is a very common finding in general pediatric practice. Infiltrations in the viscera or in the tonsil and adenoid area may be due to leukemic infiltrations or to other tumors.

Fevers of unknown origin should always be suspect,

not only of some of the more esoteric infectious diseases but also of tumor; and leukemia may at times run a course with a pyrexia and even sometimes with a normal peripheral blood and bone marrow. We have observed one child in whom everyone suspected the diagnosis of leukemia but a positive diagnosis could not be made until after he had been running a fever for over four months.

Myalgias are very commonly due to orthopedic problems and, of course, rheumatic disease which is quite prevalent in children. But about 10 to 15 per cent of all leukemias start with pains around the bones, pains in the legs, pains in the feet. Bleeding, of course, is more often a symptom of late leukemia than an early one, but we have often seen leukemias in which the diagnosis is not made by peripheral blood until many, many months after an initial hemorrhage was seen in the skin.

Another illustration of the problems in differential diagnosis are those in the intracranial group. A great many of these tumors, probably 50 to 60 per cent of those in children, occur in the posterior fossa and they give rise to cerebellar symptoms. There is another group which occurs in the hypophyseal area and then others scattering in the cortical areas and in the structures surrounding the brain. Naturally these can give rise to multiple groups of symptoms. They can be gastrointestinal. They can be sensory. They can be motor. They can be psychic. These children are referred to orthopedic men. They are referred for eye examinations. They are referred to psychologists; and all the time they may have an intracranial tumor.

Dr. Bucy is authority for the statement that a good portion, at least one third, of all the intracranial tumors in children are curable if treated early.

The neuroblastoma. This is an embryonic type of tumor which arises from the sympathetic neuroblast and it is generally, unfortunately, diagnosed only after metastases have occurred.

If we consider the areas of the body in which sympathetic tissue is distributed, we can arrive at the problems in diagnosing, or the possibilities of diagnosis in this tumor. There are cervical, thoracic, lumbar and sacral sympathetics. There are cranial nerve ganglia. There is the cardiac ganglia. There are the celiac plexus, the aortic bodies, the hypogastric plexi and also the adrenal medulla. Now a tumor distributed anywhere along here may cause not only local symptoms but possibly systemic problems.

One of the common primary sites of the neuroblastoma is in the abdominal areas and in the adrenal medulla. They may be suspected if an abdominal mass is felt and calcification is visible by roentgeno-



gram. Here is illustrated (slide) a very, very large calcified area in a neuroblastoma. Not very many of the other abdominal tumors calcify. There are exceptions, however, which we will see. Neuroblastoma is a presumptive diagnosis if a calcified area is found in an abdominal mass, particularly a small abdominal mass.

Here (slide) is a neuroblastoma arising in the cervical sympathetic without any other signs, and the next case is one of a neuroblastoma arising apparently from the skin of a child. It was just a small nodule, ecchymotic, considered, as one would, to be due to a contusion, but it did not go away. Here I think is a clinical hint aiding in the diagnosis of children's tumors. The disease, or the disturbance, doesn't follow the general expected pattern in childhood. There is something strange about it; if a contusion doesn't go away, if a fever doesn't go down, if the pains don't disappear when the usual therapy is administered for rheumatic infection or orthopedic corrections, look further, and frequently the diagnosis of tumor can be established.

The next two cases (slides) are cutaneous varieties of neuroblastoma. The first shows multiple nodules, the second only a few. The latter baby was treated some 14 years ago, and has now survived.

This (slide) is a cervical or supraclavicular node enlargement following, or associated with, a hemangioma which had been treated. This child had metastases into the supraclavicular nodes from an intrathoracic primary. Biopsy of this mass showed neuroblastoma, and that child was treated by irradiation, x-ray, and that child has survived.

Neuroblastoma is among the very highly malignant tumors in childhood, but here again, as Dr. Lawrence pointed out, don't throw up your hands even though the prognosis is very doubtful because there are many instances, not only ours, but others, of patients with neuroblastomas who have survived a good length of time, even those with metastases such as we showed you. Here (slide) is a boy who has survived approximately 12 years now, another child who has lived five and a half; another one five and a half; another one four and a half.

The Wilms' tumor, the embryoma of the kidney, is also another embryonal tumor, and is seen usually between the second month and the fourth year of life. It may occur bilaterally, and the parent who feels a tumor mass in the abdomen is often the first person who suspects trouble.

Any abdominal mass which shows on urogram displacement of the kidney might be suspect, although one must consider lymphomas, neuroblastomas, and teratomas at times. But the important thing from the child's standpoint is that it requires

surgery, and requires surgery very promptly with a minimum of delay. We don't believe preliminary irradiation should be practiced—first, because of the delay required for an adequate dose of irradiation; second, because of the fact that many of these Wilms' tumors don't diminish by irradiation; and third, because irradiation sometimes doesn't produce the desired effect in killing all the cancer cells.

This (slide) happens to be a bilateral Wilms' tumor which of course is a hopeless situation. Here is a Wilms' tumor in which a large area of calcium was laid down in the body of the growth. I just bring that in to illustrate the necessity of caution in making diagnosis roentgenographically, clinically, or even pathologically. The pathologists are well acquainted with the problems facing them in the differential diagnosis of some of the lymphomas, some of the embryonal myosarcomas and some of the neuroblastomas. The radiologist and the roentgenologist are also similarly aware of the difficulties of diagnosing not only one tumor from another in the study of a bone, but differentiating non-neoplastic disease from neoplastic disease.

A diagnosis of neoplastic disease in a child as well as in an adult implies a good deal of radical and aggressive treatment. Children who have to live their whole lives are in a somewhat different category than an adult of 25, 55, or 65 who has had his life. A child who is handicapped by the results of therapy, even where it is justified, has great social and psychological adjustments to make. Therefore, before a procedure is undertaken, and it certainly should be undertaken if it is required, all factors should be considered. The history, the physical examination, the roentgenograms, and the pathologist's diagnosis must be evaluated carefully before the management is decided.

It is not correct to throw the weight of the diagnosis entirely on the shoulders of the pathologist or the roentgenologist. All physicians with the case are involved.

Here (slide) is a very common disturbance in children. Subperiosteal hemorrhages of the newborn occur in numbers in many maternity hospitals. This child was originally suspected to have a Ewing's tumor which it did not have.

The next roentgenogram (slide) shows a periosteal elevation and slight thickening of the cortex in a child of seven, also sent to us with a diagnosis of Ewing's tumor, which it did not have. It was a so-called march fracture, and the child made an uneventful recovery.

We are, therefore, faced with a problem in childhood perhaps a little different than it is in the adult. The child cannot complain, or doesn't complain. He is entirely dependent upon his parent

for care and for frequent examination; and the parent is entirely dependent upon the physician for judgment as to procedure. It is not correct for any one of the team involved to have the other accept the responsibility. Everybody must work

together, and certainly the family physician who sees the child first is not only an essential member of the team, but probably the quarterback and the coach who really calls the signals that are going to determine the child's future.

## Surgical Treatment of Advanced Cancer

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During the past 10 years, a tremendous amount of emphasis towards radical surgery in the enormous group of diseases that we have chosen to call cancer has taken place. There has been a great deal of discussion in all branches of medical literature, particularly the surgical, as to the justification for many of these procedures, and I believe that a great deal of that discussion and a great deal of that questioning has been justified. I shall try today to set forth as clearly as I am able my ideas on what is radical cancer surgery, and what is advanced cancer, and where the two should meet.

In concept, surgery is an extremely simple method of treatment. Indeed, it is the simplest of all methods that have been chosen, and it depends entirely for its success on the ability of the operator to completely remove the tumor. One might even say that surgery is a crude method of treatment, far less refined than that employed by our radiologic colleagues, whose implements act in a manner far too complex to be as yet completely understood. Surgery utilizes the age old principle of separating the evil from the good.

One might pause here for a moment to define briefly when, in general, the two commonly accepted methods of treatment mentioned above are more applicable. Surgery is generally employed when: (1) the limits of the disease seem well demarcated; (2) the anatomy lends itself well to wide removal of both the primary and the draining node areas, and (3) the tumor is not one of reasonable radio-sensitivity. Contrariwise, irradiation is generally used when: (1) the limits of the disease are difficult to determine; (2) the anatomy does not lend itself well to wide removal of both the primary and the affected or potentially affected draining lymph node areas; (3) one is dealing with a tumor of reasonable sensitivity.

We have heard some reference in this regard already this afternoon as it applies to the radical removal of carcinoma of the cervix, in which instance one is limited in an attempt at any wide removal by the bony wall of the pelvis. It is quite reasonable

in such a circumstance to restrict one's surgical efforts to those cases in which the disease is well confined to the cervix.

Surgery has several drawbacks which must be considered. First, it may leave behind an anatomical defect. I should like to say here, however, that the anatomical defects following the employment of surgical methods are not difficult to correct since the tissues do not present the problems in healing which remain following heavy irradiation. Following the surgical extirpation of tissue of great cosmetic or functional significance, the adjacent tissues remain in an undamaged condition, and lend themselves easily to subsequent reconstruction.

A great deal was once expected of irradiation therapy, and many of these hopes have been abundantly realized. There was a day when surgeons were able to accomplish much less with many cancers than is possible today because of the dangers of shock and infection and the difficulties of anesthesia.

Intrepid individuals in the field of radiology, willing to suffer the hardships of the pioneer in any field, brilliantly attempted to sound the potential accomplishments of irradiation methods in some of these tumors which had responded so poorly to the surgical attempts of that day. That a great deal of over-enthusiasm prevailed at that time was only to be expected and in hind sight deserves commendation, when one considers the enormous problems involved. Though irradiation has not fulfilled these high expectations, in many instances it has more clearly defined the responsibility of the surgeon. Not only have its methods all too often failed to cure, but we are now beginning to recognize some of the unfortunate life-long effects which they are producing. I was very glad this afternoon, in an earlier paper, to hear of the choice of surgery, especially in young individuals having the less advanced forms of cervical cancer. These individuals only a few years ago would have been exposed to x-ray therapy with the consequential sacrifice of their ovarian function and considerable damage to im-



portant normal structures such as the intestinal tract and bladder.

During this same period of critical assessment of irradiation therapy, surgery has made many important advances, with the result that the majority of its former serious complications have largely been eliminated. I do not feel that I need to re-enumerate these since they are well appreciated by all. Suffice it to say, however, that it is not at all strange to witness a general resurgence of surgical enthusiasm toward the treatment of a great many of the tumors, which were shrouded in pessimism a few years back. The result has quite properly been that new fields are being explored and will continue to be re-explored and re-evaluated with the continued progress of the future. Its most serious limitation, which unfortunately also applies to currently employed irradiation methods, is that it is strictly local in its application and we are, unfortunately, dealing with a disease which always inherently tends to become generalized, or indeed, may already be so, at the time treatment is instituted.

Cancer spreads by direct extension or local invasion, and by involvement of lymphatic and blood capillaries. It is this tendency to invade which leads to lymphatic and blood capillary permeation, and to the involvement of adjacent organs. When lymphatic embolization takes place, arrest of the emboli commonly occurs in the next adjacent group of lymph nodes. Blood vascular emboli are usually halted in the capillary bed of organs receiving quantities of venous blood such as the liver and lungs. Apparently some may pass the lungs and enter the arterial system, whence the possibilities for metastases become much more numerous. The surgeon must assume the responsibility for local invasion and accessible lymphatic spread, for these are usually within his sphere of influence. He cannot be held responsible for dissemination via the hematogenous route since as yet he possesses no means of controlling such tumor spread. Rarely may hematogenous embolization be recoverable and then only when it is solitary and in a removable structure.

#### Factors Influencing Surgical Removal

There are several factors which should be considered since they strongly influence the extirpation of many cancers. Foremost to be considered is the surgical tolerance of the patient. Although cancer does occur in children, unfortunately, by and large the incidence of cancer rises with each succeeding decade of life as insurance statistics so clearly show. Increasing knowledge of how to favorably influence the surgical tolerance of the patient has been the most important element in increasing the scope of surgical treatment among cancer patients. Though

we are learning to surmount the complicating difficulties concerned with coincident diseases of the cardiovascular renal system and of nutrition more and more each day, they still do exist and still will frequently require very careful consideration. The management of shock and infection is now so well known as to require no elaboration.

The personal factor of increasing technical experience, in some of the peculiar procedures carried out for cancer alone, might also be mentioned at this time. There are few instances in which the mental and technical agility of the surgeon so diminishes the wear and tear on the operative patient as in extensive resections done on elderly individuals.

The second important factor relates to the anatomical setting of the tumor. Tumors arising adjacent to and invading vital structures such as the heart, aorta, common carotid artery, etc., by their location alone frustrate any attempts at surgical removal, even though they may not as yet have metastasized. Tumors arising in areas that are closely confined will present technical difficulties in exposure. One of the commonest frustrations to accurate surgical removal is troublesome bleeding which obscures the surgical field.

The complete removal of a cancer requires a degree of accuracy beyond that required for the removal of a gall bladder or for repair of structural defects, and the exposure demanded is in direct proportion. It has been my own experience that whenever malignant tissue has been cut across, even though it was recognized immediately and adequate steps were taken to widen the removal, the patient has not been cured. The oral cavity, where the smallness of the working space makes exposure difficult, is a commonly encountered example. Under such circumstances, we routinely do a temporary tourniquet ligation of both external carotid arteries. This renders a completely dry operative field. Those of you who have done any amount of head and neck cancer work know that as soon as one loses his bearing in this region, he is very apt to lose control of the entire situation. We carry out a similar procedure in the pelvis, preliminary to any extensive resection. Both internal iliac arteries are preliminarily ligated, usually using a tourniquet-like ligature, which may subsequently be removed in order that healing may not be interfered with. In abdominal operations of this caliber the necessity for anesthesia which affords complete relaxation and the benefit from generous incisions should be thoroughly appreciated by every surgeon.

The third factor, and that whose influence is still by far the greatest, is the extent of the disease. This is not subject to the surgeon's influence, but is something which must be accepted as it exists. Since

the terms "early," "late," and "advanced" are meaningless as applied to a given cancer setting, we should like to avoid any ambiguity by using the phrase "extent of the disease" and defining it as an expression of time and the biologic activity of the cancer:

Extent of disease = Time  $\times$  biologic activity.

From such a simple formula it becomes apparent that a tumor of high biologic activity, even though it may be diagnosed relatively early, may easily be beyond the control of the surgeon. It may also be appreciated that tumors frequently termed "advanced" may simply represent tumors of low biologic activity, which perhaps have expended a great deal of their energy in local growth over a rather long period of time. These may still be easily amenable to surgical removal.

We may combine all of the factors involved into one very simple equation:

$$\frac{\text{time} \times \text{biologic activity}}{\text{treatment}} = \text{prognostic index.}$$

Where the general condition of the patient will permit and where the setting of the tumor lends itself to wide and extensive removal, the treatment factor will be large, and the prognosis will be influenced favorably. Where the biologic activity is high or the time factor is long, the prognosis will be altered unfavorably. Considering such a simple equation, it then becomes readily apparent why a cancer of the pancreas or a cancer of the esophagus, both tumors of high biologic activity occurring in locations where they are not diagnosable early and in which the limits of surgical removal are narrow, offer an extremely poor, usually hopeless prognosis.

#### Biologic Activity

A brief discussion of what is meant by biologic activity might here be in order. First, let it be said that if the implications of this term were thoroughly understood, the problem of cancer treatment might

largely be solved. There are some aspects of it, however, which are quite tangible, and when considered in relationship to one another contribute considerably to a better understanding of the clinical problem involved. We must first distinguish between those tangibles which should properly be called influencing factors and those which are simply expressions of the factors involved.

Age and sex are well known to influence the activity of many tumors. Pregnancy and lactation exert an extremely unfavorable influence on mammary carcinoma. The benign course of melanoma preceding puberty, and its extremely malignant course following that period of hormonal turmoil, are known facts. The site of the tumor, its histologic type and grade are well known influences. The dissimilarity of behavior, of epidermoid carcinomas of the hard palate and of the tongue, for example, are well known. The differences in behavior peculiar to sarcoma and carcinomas have long been known and the increasing tendency for metastases of the higher grades of tumors is also well known. Many of these factors might be mentioned, but the above will serve as examples. Suffice it to say that such factors peculiar to any given tumor should be thoroughly understood and considered before definite treatment is undertaken.

Those aspects of biologic activity which are expressions of the above mentioned influences must be considered in their relation to the probable time factors involved. The size of the primary, the relationship of appearance of node metastasis to the state of the primary, and the number of nodes involved are expressions which, when considered relative to the time factor involved, provide vital information.



Figure 1-A. Patient presenting a thyroid adenoma with a tumor of 20 years duration involving left upper extremity. This proved to be a metastasizing struma (solitary).

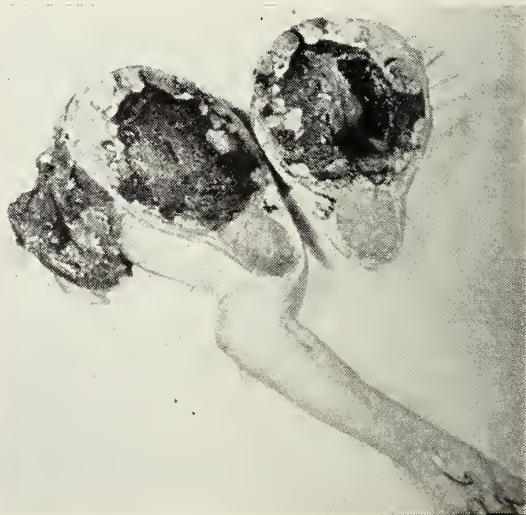


Figure 1-B. Interscapulo-thoracic amputation specimen. Marked cystic degeneration with total absence of the humerus.





Figure 2-A. Enormous chordoma of the femur. The specimen removed by disarticulation of the innominate bone weighed more than half of the preoperative weight of the patient.



Figure 2-B. Patient alive and well eight years after operation.

The aims of surgical treatment are first, and foremost, cure; and secondly, to obtain palliation. The meaning of cure is clearly apparent. The term "palliation" has come to be too loosely used and is frequently belied by the results obtained or by the amount of physical hardship imposed on the patient in an attempt to obtain it. Dorland states that "palliation" is "that which affords relief but does not cure, or to reduce the severity of." Webster's definition uses the phrase "to reduce in violence." It does

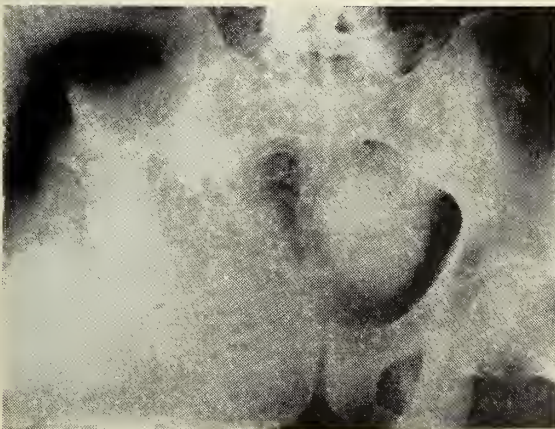


Figure 3-A. Enormous chondromasarcoma involving entire right innominate bone. Hindquarter amputation involved removal of entire right ala of sacrum opposite pubis and portion of prostate.



Figure 3-B. Patient living and well four and one-half years after operation. (Died of a stroke shortly after photograph was taken).

not appear to us to be reasonable to impose extensive operations on a patient in whom the benefits to be obtained are at the outset highly problematical and which, in the final analysis, amount to a prolongation of life measurable in days, weeks, or even a few months of continued misery. There can be no question of the benefit to be obtained from the relief of obstructive lesions of the alimentary tract, for example, since these are often the source of considerable discomfort to the patient. However, when all chance for cure is known to be passed, it would seem reasonable to confine one's efforts to procedures of less than extreme major proportions. Experience teaches and it is well to bear in mind that under circumstances thought to be much more favorable than those already assessed as being hopeless, a reverse form of palliation is occasionally obtained.

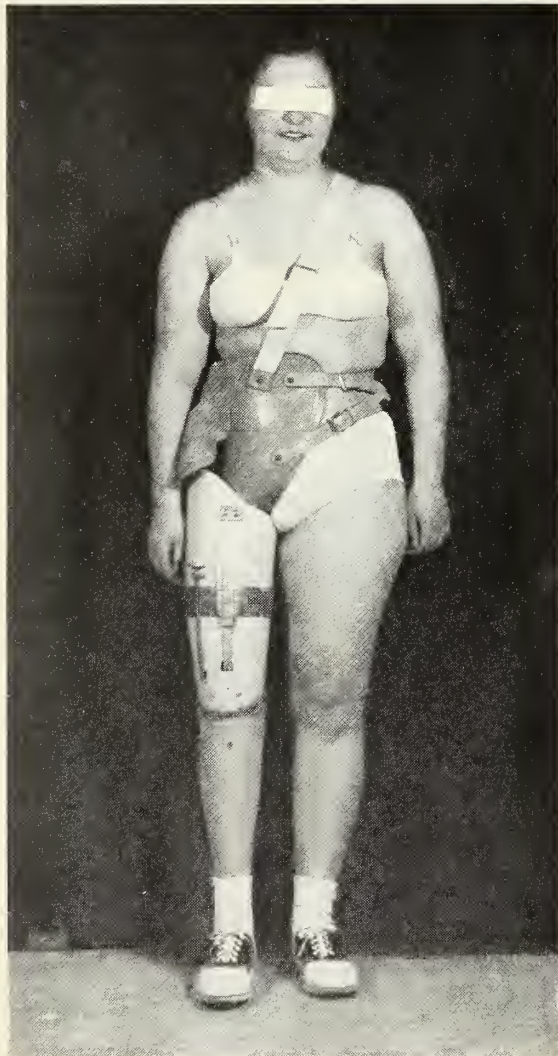


Figure 4. Patient previously subjected to disarticulation of the innominate bone wearing a prosthesis.

With this as a rather lengthy introduction, I should like to present three groups of cases, with the results obtained. They consist of patients in whom the extent of the disease had reached such proportions as to demand unusually extensive surgical procedures if any hope for its eradication might be entertained. In each instance cure was the goal, but palliation was often a gratifying by-product.

#### Forequarter and Hindquarter Amputations

The first of these consists of extended amputations of the forequarter and hindquarter type. Of

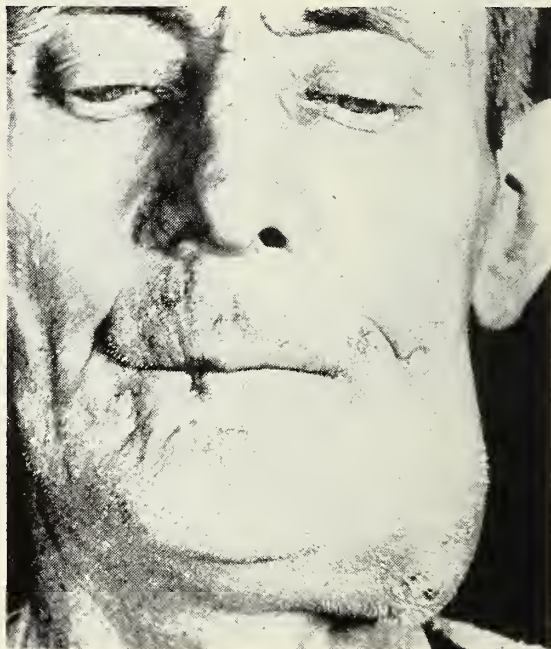


Figure 5-A. Large ulcerating submaxillary node invading mandible (primary-buccal mucosa).

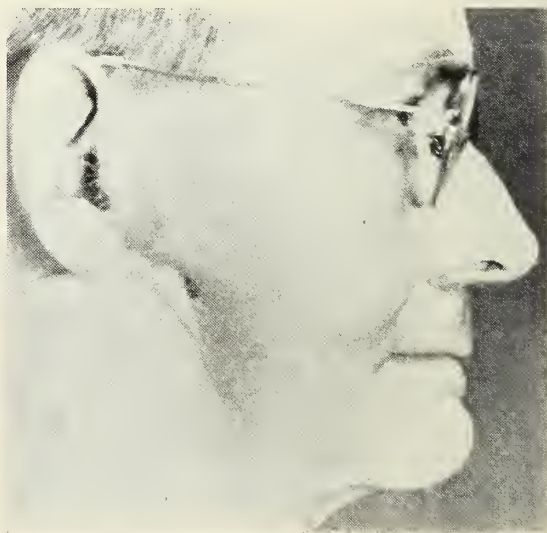


Figure 5-B. Jaw resection and neck dissection combined. Function excellent. Living and well nine years post-operatively.



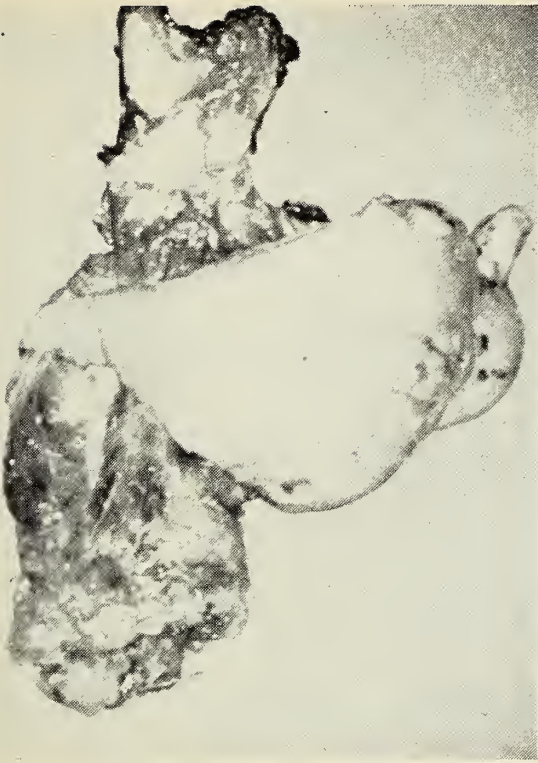


Figure 6. En bloc specimen consisting of entire lower lip, hemimandible and contents of one side of the neck.

the hindquarter amputations nothing less than a disarticulation of the innominate bone was accomplished, and in several a portion of the sacrum and opposite innominate bone was also removed. Five of the 13 patients are living and well for four or more years. One is presently living with a pulmonary metastasis, which we intend to remove.

The histologic diagnoses among these long term survivors are, I believe, highly significant. One presented an extensive chondroma of the femur and soft tissue of the buttocks, the entire specimen weighing 55 pounds. The second presented an extensive

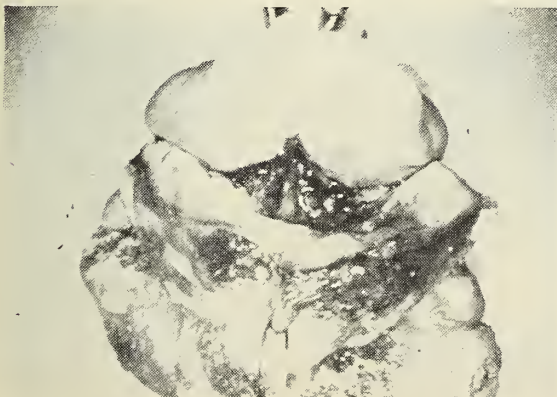


Figure 7. Carcinoma of the floor of the mouth. En bloc specimen consisting of the anterior half of the tongue, the posterior sagittal half of the anterior mandible (the anterior sagittal half remained as an intact bridge) and the contents of both sides of neck.

chondrosarcoma of the entire right innominate bone. Another presented a fibrosarcoma of the soft tissues about the axilla; the fourth an extensive epidermoid carcinoma of the entire upper arm, shoulder, and anterior chest wall region; and the fifth a metastasizing thyroid struma involving the humerus and shoulder region. By and large, these represent tumors of low to medium biologic activity, which is at once the explanation for their survival and the reason why the procedures carried out were considered worthwhile.

#### Resection-Dissections About the Head and Neck

The second group were treated to extended resection-dissection operations about the head and neck structures. Such removals usually involve the primary tumor in continuity with its draining node area. Included in addition to the neck dissection was a removal of the parotid, the mandible, tongue, palate, maxilla or mandible, etc. In all there were 78 procedures. Twenty-five patients had primary disease and node disease simultaneously present and removed in continuity with whatever additional structures were indicated. There were two post-operative deaths, but seven of the patients are still living and well (28 per cent). Twenty of these patients had carcinomas of the epidermoid variety, and five are living and well.

Of those patients in whom the disease at the time they were first seen was confined to the nodes or had extended from the nodes to involve some adjacent structure, there were 21. In these patients

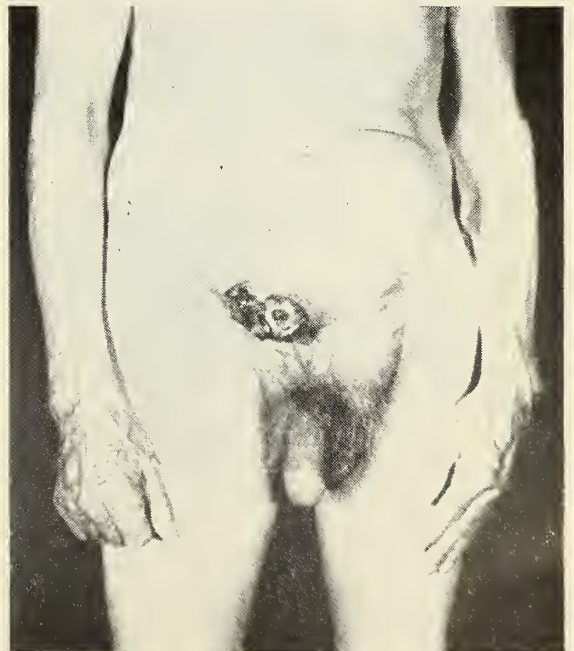


Figure 8. Bulky carcinoma of the colon fungating through the abdominal wall. Easily resected with wide removal of abdominal wall.





Figure 9-A. Carcinoma of rectosigmoid resected with adherent uterus and small bowel.

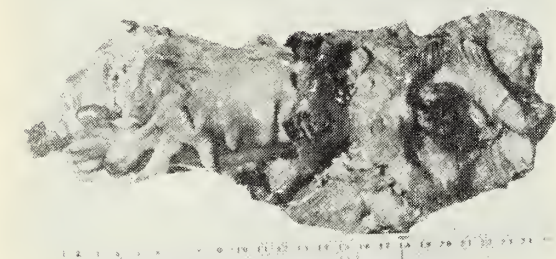


Figure 9-B. Carcinoma of lower rectum fungating through wall of vagina. Bowel resected with entire female genital tract.



Figure 9-C. Rectum resected with entire retro-urethral portion of prostate.

the primary had been successfully treated prior to the time the patient was seen with the node disease. There were three post-operative deaths, but 11 of the patients are living and well for long pe-

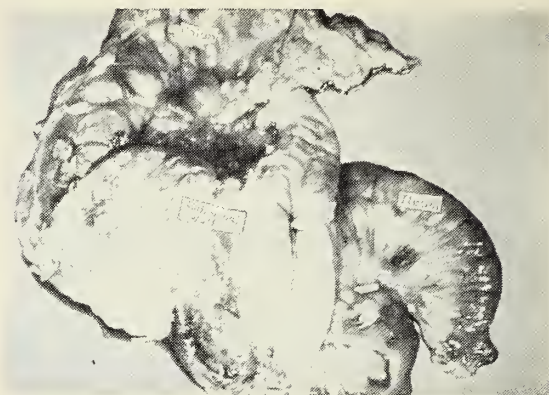


Figure 9-D. Carcinoma of cecum extensively invading abdominal wall anteriorly and laterally.

riods of time (52 per cent). Of the epidermoid carcinomas requiring such extensive removals, an excellent prognosis may be anticipated from those of low histologic grade in which the nodes are not coincidentally present with the primary, and in whom the interval between treatment of the primary and the first evidence of node metastasis is 12 or more months.

Of the resections done, in which the nodes proved to be negative for evidence of metastatic disease, there were 32 in number, of which 22 or 70 per cent are living and well.

#### Extended Resections of the Colon and Rectum

The third group consists of extended resections of the colon and rectum and includes only those patients whose tumors had extended to involve one or more adjacent organs. In all there were 65 patients. In approximately two-thirds a single additional structure was removed, and in the remaining one-third, more than one structure or organ was removed. Thirty-two of the entire group are living and well for long periods of time. Eighteen of these have now survived more than five years. In review-

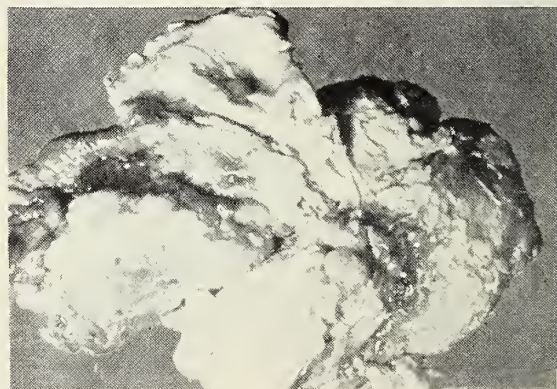


Figure 10. Carcinoma of rectum invading the posterior bladder wall. Bowel and bladder resected; sigmoid and anus anastomosed; ureters implanted in the sigmoid; unpleasant wet colostomy avoided.



ing the ominous pathologic factors in these tumors, the higher incidence of lymphatic, vascular and perineural involvement was noted. *In 40 per cent, the sole ominous pathologic feature was the local extension.* In other words, these represented a group of cancers of the large bowel which appeared to content themselves entirely with local growth with no inclination to metastasize, and it is this group which justifies any amount of surgical effort to obtain their complete removal.

In concluding, I would like to say that the term radical surgery has come to mean very little. It is relative only to the times during which it is used. Procedures which we formerly thought to be quite radical, which were done only occasionally, with considerable trepidation have now become commonplace. Many of the procedures shown here today were considered to be most unusual and highly radical when they were first accomplished, and are now being generally done in a rather matter-of-fact sort of way. It seems safe to predict that as long as

improvements in management of technic continue, this trend will keep pace with it. The surgeon must always study his patient with extreme care and be unstinting in his efforts to provide all that his art affords.

#### Conclusion

1. The present day position of surgery in the treatment of cancer is briefly reviewed.
2. The factors influencing the complete extirpation of cancer are discussed.
3. The particular influence of biologic activity of tumors and what it implies is stressed.
4. The relationship of surgical treatment to the extent of the disease and prognosis is presented in the equation:

$$\frac{\text{Time} \times \text{Biologic activity}}{\text{Treatment}} = \text{Prognostic index.}$$

5. Several types of cases which required extended surgical procedures are presented as exemplifying this relationship.

## Congenital Defects and Associated Neoplastic Disorders in Children

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During the last decade there has been a very great stimulus to the studies of diseases of the fetus. This has been perhaps accentuated by the well known findings of the malformations which occur in the fetus during pregnancy of women who have suffered from German measles. There has also been experimental work done, particularly by Warkany and his group, on the nutritional aspects of determinants causing congenital malformations. So we are at present deep in the study of the possible causative factors, environmental as well as inherent and intrinsic in the individual, which under certain favorable conditions will terminate in what are called anatomic malformations.

We know that in the neoplastic field a great proportion, certainly most all of the tumors which occur in children before the fifth year, are of congenital origin. The cause behind this we are quite unacquainted with. In the environmental field, we are aware that in the adult various environments will produce in certain individuals the disorder we call cancer.

But whether environmental factors will produce this disease in the fetus, we still have to determine.

It is of speculative interest to consider the cause or causes of the simultaneous appearance of an anatomic defect and a tumor in the same child. It would be highly improper in our present state of knowledge to postulate a relationship, but nevertheless, regardless of the ultimate conclusions about this relationship, the coincidence may be of clinical value to the physician in charge of the child.

I would like to show you some of these situations which we have encountered at Memorial Hospital and elsewhere. Examples are to be found, as usual, in much of the old literature, but I don't believe they have been stressed quite enough, and I would simply like to illustrate a few of these incidents.

Here (slide) is a child with a supernumerary digit and a Wilms' tumor. The child was sent into the hospital for removal of the supernumerary digit, which was done. It was a hospital where every child is given a complete examination, and several days after the surgery was performed the pediatrician examined the child and found an abdominal mass which, on operation, was found to be in the renal area and on pathological examination was proven to be a Wilms' tumor. This child subse-

quently died from metastases of his tumor. A necropsy was performed, and in the esophageal wall there was a bronchiogenic cyst also.

This (slide) is a child also with a Wilms' tumor with abdominal spread. He was receiving irradiation over these fields at this time. He also has congenital cataracts.

This (slide) is a cystic hygroma, a tumor of lymphangiomatous nature, and a congenital malformation of this left leg. I think the difference in the circumference of the left leg, as well as the length, is evident. This is a radiograph of the child showing the large cystic mass. A point in management we mentioned yesterday might be repeated here, namely the spontaneous regression of certain of these tumors, particularly hemangiomas but occasionally also in this type of tumor. This is not an easy tumor, in many instances, to remove surgically. It is not responsive to treatment by irradiation and radium; sclerosing solutions sometimes have been used with success, but surgery seems to present the most favorable type of therapy. However, the tumor frequently involves many important structures in the neck and may have extensions down into the thorax so that a surgical procedure may be quite formidable. It has been our policy to postpone major surgery in children, if not urgently required, until the age at which the child could withstand a major procedure. This is generally better tolerated—after the immediate neonatal period—after the age of two. In waiting for the period to elapse, however, we found the hygroma regressed spontaneously in this case. We have had two such experiences with hygromas although they are not reported very often in the literature. Here (slide) is the child two years later. You can see that her left leg is still a little bit shorter than the right, but actually it is growing and it may compensate eventually.

This (slide) is a radiograph of the left hand of a child five years of age. I think that you can see in the first metacarpal bone that the normal concavity of the shaft is present and also that the soft parts shadow is quite flat. The thenar eminence was lacking; she had a congenital absence of the muscles of the left thenar group. On the right hand, I think you can see the difference in the size of that metacarpal compared with the one on the left, a broadening of the shaft, and this bulge of the soft parts. On this hand she had a tumor which was removed and was found to be an embryonal

rhabdomyosarcoma, and she succumbed about four months later from pulmonary metastases. She had had the tumor on her hand for five years and it had been seen by hundreds of people.

This (slide) is a boy with a lymphosarcoma of the parotid who also has a patent ductus arteriosus. This picture was taken three years after irradiation to that tumor. The child has survived four years. For those who take a dim view of the possibilities of any child with a malignant tumor, I think it is worthwhile to remember that even lymphosarcoma, one of the most highly malignant tumors, may be amenable to therapy.

Here (slide) is a child with several defects, malformation of the nose and a hemangioma of the lip. The child, up to the age of nine months, had been progressing satisfactorily, but then began to show muscle weakness. He didn't want to stand, then he didn't want to sit, and later he failed to even crawl around in his bed. Examination showed separation of the sutures, Macewen's sign and bilateral choked discs. This roentgenogram shows dilated ventricles, and it was assumed that he had a posterior fossa tumor, probably a hemangioma. At operation he was found to have an astrocytoma of the cerebellum.

The next case is that of a boy nine years of age who has multiple cafe au lait spots, congenital malformations of the vertebra, gynecomastia and a lymphangioma of the neck. He has several osseous defects, including a cervical rib, fusion of several vertebra and a mass in the superior thoracic area on the left which has not been removed as yet. He also has these osteolytic areas in the bones.

Here (slide) is a child with one cafe au lait spot on the back, another on the abdomen, a hemangioma on the foot and a lower abdominal mass. On the ear he had a verrucous like growth. The abdominal mass was excised quite completely and it was found to be a rhabdomyosarcoma.

In summary, I would say that whether or not anatomic congenital malformations and neoplasms in the same individual have a causal relationship is unknown. However, an opportunity exists here, I believe, for every physician who treats children to contribute to a long time study of congenitally malformed individuals, not only during their childhood but also to determine later on during adult life what, if any, neoplastic tendencies the individuals who have such congenital anatomic malformations may present.



# Carcinoma of the Breast

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This morning we have a subject which, I trust, will remain interesting to you. It certainly is an extremely important subject, one about which we should know a great deal more than we appear to know. I believe that among the mistreated cancers we see, cancer of the breast occupies a prominent position. It would appear that it is mistreated as often as any other tumor, in spite of all the information we now have available regarding it.

Carcinoma of the breast is a disease of the breast parenchyma, and occupies a position of intermediate malignancy in the gamut of tumors insofar as life expectancy and five-year survival are concerned. It makes up approximately one-fourth to one-fifth of all cancers in women and kills approximately 16,000 women annually. Though it is largely a disease of females, it is not entirely so, approximately two per cent being found in males. The reported average age varies from 50 to 55 years. It is conspicuously absent during adolescence and under the age of 20 years. Approximately 80 per cent of cases are encountered after the menopause.

## Etiologic Factors

There is no more actual information available regarding the causation of mammary cancer among humans than there is regarding other forms of malignant disease, but at least some clinical observations suggest possible links in an as yet incompletely understood chain of events. Most of these observations point to the probable influence of hormonal stimulation. The absence of mammary cancer during the first two decades of life and its high incidence immediately following, during, and just preceding the menopause should be noted. The higher incidence among patients who have or have had chronic cystic mastitis, another hormone related condition, would also appear to be of significance.

The probable influence of genetic susceptibility must also be considered. It is not an unusual clinical experience to encounter families in which breast cancers occur startlingly often. There is probably no breast lesion which would be acceptable as a pre-cancerous lesion. Yet clinical experience indicates that whatever underlying influences are operative in chronic cystic mastitis and in duct papillomatosis



Figure 1. Patient has a carcinoma of the left breast with visible skin attachment and nipple retraction. Simultaneous bulky sarcoma of the right breast.

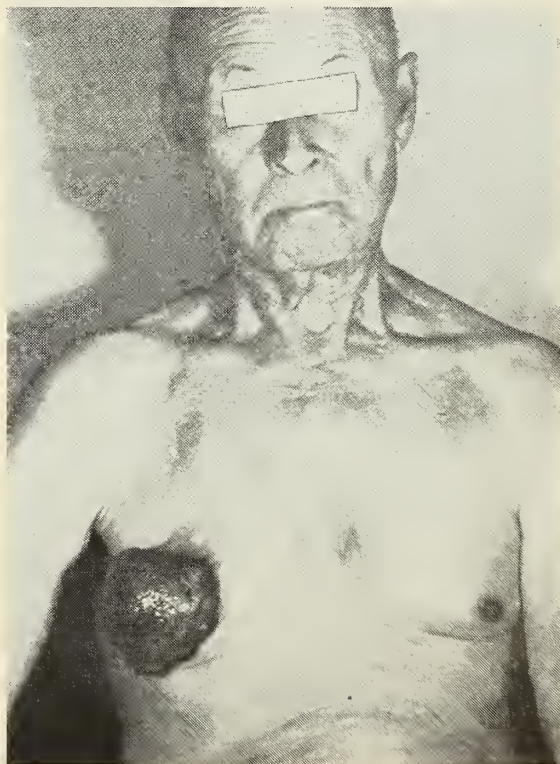


Figure 2. Large adenocarcinoma of male breast of 10 years duration.



certainly predispose the breast tissue to subsequent malignant change.

#### Clinical Pathology

Mammary cancer is a disease of the duct epithelium. It should be emphasized that Paget's disease of the nipple is but a clinical variant of this. The eczematoid nipple changes are but an outward manifestation of the underlying duct cancer. For the most part mammary cancer pursues a moderately active course. Abnormally rapid progress may be anticipated when inflammatory-like changes are present (inflammatory carcinoma).

In a small percentage of cases the activity of the cell seems to be largely directed toward intraductal proliferation with the accumulation of intraductal debris which may be expressed from the cut surface of the tumor in a comedo-like fashion. These comedo-carcinomas along with the mucinous carcinomas, which altogether make up less than 10 per cent of all breast cancers, may be expected to run a somewhat less aggressive than average course and to be more frequently curable. By and large, however, the clinical activity of histologically similar cases of the usual forms of breast cancer may vary very widely.

#### Symptoms and Signs

The common symptoms and signs of carcinoma of the breast should by this time be so well known

as to warrant little attention. Several points may bear emphasizing. It is still too little appreciated, even among physicians, that pain is almost invariably absent in the patient with anything but advanced mammary carcinoma. Ulceration with infection, bone, nerve, or pleural involvement or swelling of the arm, secondary to massive axillary node involvement, may all produce pain, but curable cancer never does so. A "prickling" or "sticking" sensation may occasionally be mentioned, but actual pain is absent. Pain, in the presence of a lump in the breast, is presumptive though by no means conclusive evidence that the lesion is probably non-cancerous.

Textbook accounts of the clinical setting of breast cancer are largely of academic interest only since they tend to stress the varied features of advanced cancer. If time is permitted to lapse until these have become manifest, all reasonable chance for cure has usually been lost. It cannot be emphasized too strongly that the only sign or symptom necessary for a presumptive diagnosis of breast cancer is a "lump in the breast." Any lump in the breast must be considered malignant until it has been microscopically proved to be otherwise. One of the most damaging statements that can be made by a physician to a patient who has a lump in the breast is that "You need not bother it, as long as it does not bother you." The "wait and see" policy has

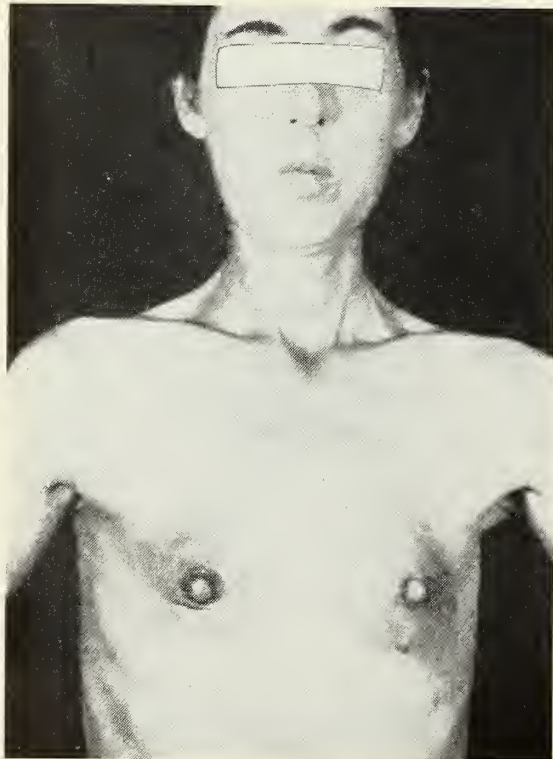


Figure 3. Bilateral simultaneous mammary carcinoma of inflammatory type.

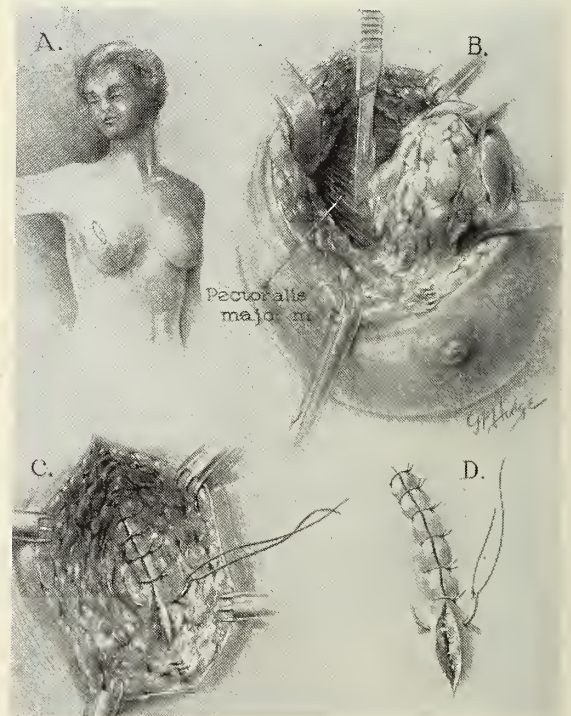


Figure 4. Technique of locally excising a breast tumor: overlying skin sacrificed, wide removal of grossly normal breast tissue, removal of pectoral fascia.



been practiced too often in the past. Patients who have previously had lumps removed which proved to be nonmalignant are no exception to the "cancer until proved otherwise" rule when new lumps appear.

Occasionally carcinoma may be present when no lump is palpable on breast examination. This most commonly occurs in Paget's disease. Here the eczematoid changes which begin on the nipple and slowly spread out concentrically over the areola will call attention to the underlying diffuse duct carcinoma. Occasionally, a small area of skin flattening or a very slight dimpling, appreciable only with the proper lighting arrangement, may be the sole hint to a small underlying carcinoma.

In the presence of a bloody nipple discharge, careful examination usually will reveal either a small mass or one area of the breast which, on pressure, causes the discharge to exude. In the absence of a mass, it is extremely rare to find a malignant lesion responsible for the blood, and somewhere under 50 per cent of patients with bleeding nipples have been found to have breast carcinoma.

#### Management of a Patient With a "Lump in the Breast"

Any patient presenting a "lump in the breast" should have it removed. The question, therefore, arises. What is a "lump in the breast?" In general, a breast lump has fairly well circumscribed borders. A fibroadenoma is a very well circumscribed tumor, usually movable in the breast substance. In cysts, areas of fibroadenomatosis and carcinomas, the borders become less distinct in the order mentioned and occasionally may be represented only by an

area of thickening or, as mentioned above, an area of skin flattening. Under all such circumstances, the lesion should be considered carcinoma until proved otherwise.

The excision of a lump in the breast should be carried out in the operating room with preparations to proceed immediately with a thorough radical mastectomy if the mass proves to be malignant. It is fairly generally held opinion, with considerable statistical evidence to support it, that the five-year survival of the patient is considerably interfered with when a breast lump is diagnostically excised and a radical mastectomy is carried out a week or two later. One can only postulate that the vascular and lymphatic engorgement incident to the trauma and healing of the excision wound may play a part in the dissemination of either incompletely excised local disease or disease already present in the axillary lymph nodes.

#### Technic of Local Excision

Since in accomplishing the local excision of a breast tumor the initial consideration is that the mass may be a cancer, the entire technic should be based on this possibility. The patient is therefore draped as for a radical mastectomy. Cosmetic incisions have little place in the management of breast cancer. This does not imply that they may be entirely forgotten, but cosmetics may only be considered when no direct sacrifice to easy exposure and incision of the suspected tumor is imposed. In general, a skin incision which leads most directly to the tumor is best.

The direction of the incision should be planned

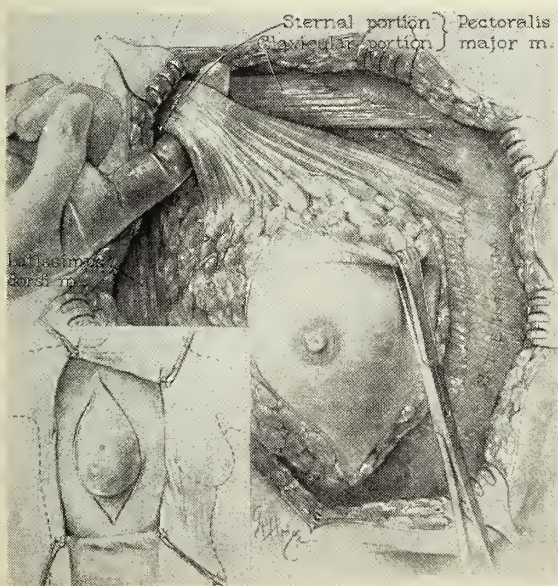


Figure 5. Radical mastectomy: commonly used elliptical incision (insert); lateral and medial flaps developed; humeral attachment of costal portion of pectoralis major muscle being freed.

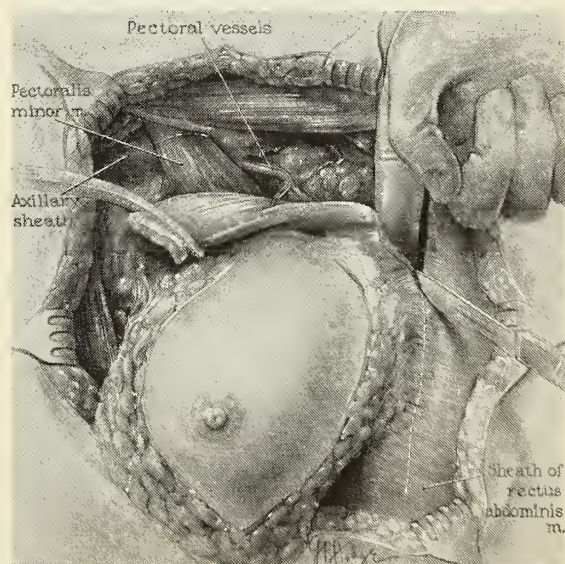


Figure 6. Radical mastectomy: costal attachments of pectoralis major muscle being cut; perforating branches of internal mammary vessels are secured at this point.



to accommodate as nearly as possible the subsequent radical mastectomy. When tumors lie close to the skin, a skin ellipse of varying width should be excised along with the underlying breast tissue to avoid cutting through involved dermal lymphatics. The tumor itself should be excised widely, inclusive of all underlying breast tissue and pectoral fascia. This will accomplish removal of adjacent lymphatics which may be permeated for short distances by carcinoma as well as the primary draining lymphatics which proceed to the pectoral lymphatic trunks.

It appears to make little difference whether the excision is accomplished with the endotherm knife or ordinary scalpel. Advocates of the former method seem unable to demonstrate any better five-year survival rates. Haagensen has proposed incising rather than excising tumors. In our own experience tumors large enough to be incised cause little trouble in making a diagnosis. Having frequently found small areas of carcinoma incorporated in larger masses of mastitis, it has occurred to us that the carcinoma might frequently be missed if such a purposed technique were routinely employed. In general, we have chosen wide excision as the most generally applicable diagnostic procedure.

The surgeon seeing large numbers of breast cancers will be able to determine in approximately 80 per cent of circumstances whether he is dealing with a carcinoma by the gross appearance of the cut specimen. Not infrequently the pathologist will also be unwilling to make an immediate commitment on his examination of a quick section, but will wish to await a more carefully prepared paraffin section.

#### Simple Mastectomy

Strictly speaking, this includes only simple removal of the breast. However, it would seem that one should include under this heading every procedure which falls short of being a radical mastectomy: the removal of the breast with low axillary nodes; the removal of the breast with a portion of the pectoralis major muscle and a part of the axillary contents; et cetera. These are all compromise procedures and should be employed only when some definite, positive contraindication to radical mastectomy exists. The absence of palpable axillary nodes is no indication for simple mastectomy, for microscopically positive nodes are nevertheless present in 30 to 50 per cent of all such cases. We have felt it necessary to resort to simple mastectomy in seven of 500 breast removals for mammary carcinoma.

#### Radical Mastectomy

This anatomic dissection described almost simultaneously by Halsted and Willy Meyer is technically not easy if one wishes to accomplish it properly.

Though it is seldom realized, more technical experience is required in the accomplishment of a thorough radical mastectomy than in the performance of the average subtotal gastrectomy. The more striking difference between the immediate post-operative mortalities of the two procedures has somewhat overshadowed this fact. In addition, there can be little question but that more is lost in the execution of an inadequate or poor radical mastectomy for breast cancer than in a mediocre gastrectomy, partial or total, for carcinoma of the stomach. This becomes apparent when one realizes that a properly executed radical mastectomy will save approximately five times as many patients as a well executed gastrectomy.

The skin incision should suit the individual case. In general, the oblique or vertical ellipse (Willy Meyer) will be most frequently applicable and provides excellent axillary exposure. For markedly pendulous breasts the transverse elliptical (Stewart) incision is useful. However, it tends to make exposure of the upper axilla somewhat more difficult. The arrowhead (Greenough) incision is indicated whenever wider removal of axillary skin is desired, as when a primary is located superficially in the axillary portion of the breast or when an involved low axillary node is attached to the skin. Incisions which tend to leave angular skin flaps are to be avoided since the points will often undergo necrosis. Under no circumstances should a radical mastectomy be planned under a specified incision nor should a tumor area be closely approached in order to conform to any certain incision.

The question is often asked, "How much skin should be removed adjacent to the tumor?" An anatomic description of the lymphatics of the breast is not intended here, but the answer to the above question is pertinent to them. The primary lymphatic drainage of the breast is deep into the axillary and pectoral lymphatics. Retrograde lymph flow into the skin lymphatics in tumors not directly involving that structure takes place as a rule when the primary lymphatic routes are blocked. Therefore, if one takes at least as much skin about the tumor in centimeters as he is able to go around the tumor in depth to the chest wall, he will as a rule have taken a sufficient amount. The conventionally stated 2.5 to three cm., or two to three finger breadths may not be nearly adequate. One should never take less skin than is indicated but should plan to close the defect with a split graft if necessary.

If the skin incision has been made in conformity with this principle, there is no need to dissect extremely thin skin flaps, but they may be dissected in a graduated fashion, thin at the line of incision,



progressively thicker as their bases are reached. This assures them a better blood supply and decreases the incidence of flap necrosis. The lateral flap is carried back to a point about 2.5 cm. posterior to the anterior border of the latissimus dorsi muscle.

Dissection of the medial flap proceeds to the sternal midpoint. Inferiorly, the costal margin limits the dissection and, superiorly, the junction of the sternal and clavicular portions of the pectoralis major muscle. This anatomic division, though usually visible, can readily be developed by gently inserting the finger into the muscle at the costoclavicular joint where these muscular divisions converge. This intermuscular plane is developed laterally to the humerus. The sternal portion is then detached from the crest of the greater tubercle of the humerus and retracted medially and inferiorly.

There is no need to remove the clavicular portion of the pectoralis major muscle since it does not interfere with exposure of the axillary vein and obscures no lymph nodes draining the breast. Just below the costoclavicular joint the finger may be inserted into a readily identifiable cleavage plane beneath the sternal attachments of the pectoralis major muscle. The origin of this muscle is severed without traction. It is here that the perforating branches of the internal mammary vessels with their lymphatics are encountered, clamped, cut and ligated. Those in the second and third interspaces are usually the largest of the group.

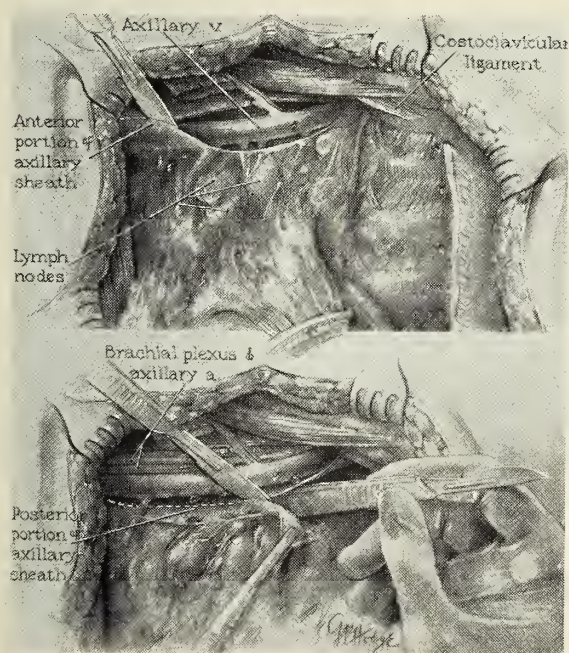


Figure 7. Radical mastectomy: the insertion of the pectoralis minor muscle has been cut; above, the anterior layer of the axillary sheath is being incised, sharp dissection is used; below, the posterior layer of the sheath is cut. The dissection should begin at the costoclavicular ligament.

Again considering momentarily the lymphatics of the breast, drainage is primarily by way of the external mammary (axillary) and internal mammary routes. Though the external mammary group is the larger of the two, it has interposed along its course an elaborate node filter system (axillary lymph nodes). The internal mammary lymphatics lack such a system until they have entered the chest. For this reason it has seemed logical to section the internal mammary group first, supposing that cells lying within the local lymphatics occasionally may be shaken free during the operation.

The costocoracoid membrane (coracoclavicular fascia) is next divided, thereby exposing the pectoral vessels and nerves. These are divided and ligated. The scapular insertion of the pectoralis minor is next detached close to the coracoid process. It contains a small nutrient artery at this point which usually requires ligation. Part or all of the pectoralis minor may then be detached from the chest wall as desired. Excellent exposure of the entire axilla is thus obtained. The anterior axillary fascia is incised over the large nerve trunks to the upper extremity and the axillary vessels. Gentle traction and sharp dissection are all that is needed to complete the exposure of the axillary vein to its inferior border.

Beginning at the costoclavicular ligament (a tough, sharp, readily identifiable structure), another areolar tissue sheath, the posterior axillary fascia, is incised and a plane is entered which extends laterally, anterior to the external intercostal and serratus anticus muscles to the scapular and latissimus

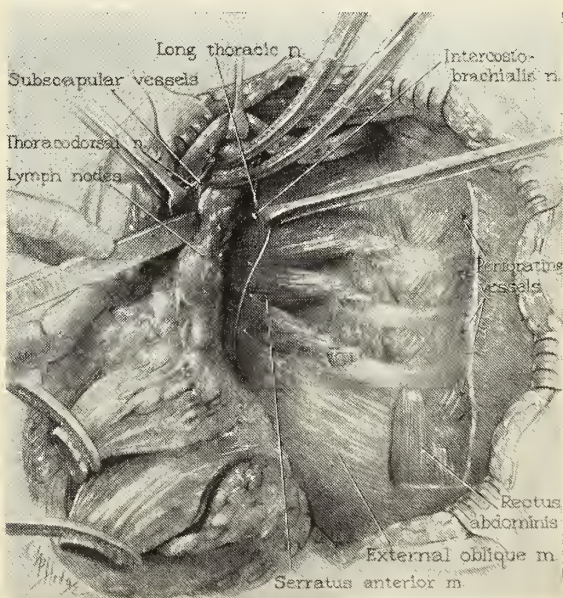


Figure 8. Radical mastectomy: as the axillary contents are swept laterally, the long thoracic nerve is found within the posterior axillary sheath; the thoracodorsal nerve is located just medial to the subscapular vessels; the subscapular fascia is divided high above the vein freeing the axillary contents.



dorsi muscles. The axillary contents are contained within this fascial envelope, which is then freed from the axillary vein in a downward, lateral direction by ligating tributaries of the axillary vein as they are encountered.

The axillary vein may be removed without the development of appreciable arm edema in most cases if lymph nodes are adherent to it. The nerve to the serratus anterior muscle is found partly within the posterior areolar sheath described, and may readily be dissected free and should be carefully spared. Injury to it produces winging of the scapula. The nerve to the latissimus dorsi is somewhat more difficult to find but usually is encountered just medial to the subscapular vein. When any extensive low axillary node involvement is present, this nerve should be sacrificed rather than risk tumor dissemination by dissecting it free.

Care in the dissection of the axilla is probably the most important part of a radical mastectomy. Adequate exposure of this entire area cannot be obtained unless the entire costal head of the pectoralis major muscle is removed. Blunt finger or gauze dissection or the use of rake-like instruments to expose the axillary vein tributaries are to be discouraged since they unquestionably disseminate cancer cells.

Following removal of the breast the wound is well lavaged with saline to remove fatty debris. A drain is placed through a stab wound in the lateral flap up to the axillary vein and the flaps are apposed. If this cannot be done, they are sutured to the chest wall and a split thickness graft is applied. The careful application of a dressing with even pressure applied in the axilla and to the flaps will prevent all but occasional serum pockets from forming.

#### General Considerations

Nitrous oxide induction followed by ether-oxygen is a very good anesthetic in radical mastectomies. Patients may be kept in the first phase of the third stage of anesthesia since complete muscular relaxation is not required. By actual measurement the average patient will lose at least 500 cc. of blood during such a procedure. Collier and co-workers in a collected series found the average blood loss at radical mastectomy to be 732 cc. In many instances it is advisable to transfuse during the operation to replace this blood loss. With such a large wound exposed to contamination from the air for several hours, it is important to work with as little conversation and as gentle handling of tissues as possible. Traction upon the pectoral muscles incident to their removal will often precipitate shock.

#### Complications

The complications of radical mastectomy are as

a rule of minor degree. Serum pockets and infections, either as a result of undiscovered serum collections or secondary to skin necrosis, make up the majority. Pneumothorax resulting from punctures of the intercostal spaces and air embolism caused by injury to the axillary vein have been reported but have not occurred in our hands. Any of the complications peculiar to a major surgical procedure done on elderly patients may occur. Shock may result from blood loss and excessive traction unless care is exercised.

We have had only four deaths in well over 500 mastectomies. One of these was due to cardiac failure, one to pulmonary embolism, one to uremia, and the fourth was due to a wound infection followed by bacterial endocarditis. In some respects the low mortality attending radical mastectomy has been a deterrent to the cure of breast cancer for it has, in instances, attracted those to attempt the operation who are not entirely familiar with its meticulous accomplishment. It must be remembered that the chance for cure of the patient whose disease still remains localized to the breast and axilla lies in the surgical treatment alone, and that an enormous responsibility is thereby imposed.

#### Irradiation

There is no question but that carcinoma of the breast should be radically removed if no contraindications to such treatment exist. Whether this should be preceded or followed by roentgen therapy, however, has given rise to considerable controversy. It is now quite generally agreed that preoperative irradiation has little place in the treatment of mammary cancer. It is still contended by a few that improved five-year results may be obtained by the use of post-operative therapy to the surgical field, though this is highly disputed. Many of these improved results have taken place during more recent years and may probably be more correctly ascribed to earlier diagnosis. In the treatment of locally advanced disease in which surgical removal cannot be accomplished, Lenz has reported highly gratifying results. Patients with metastases to the lungs, pleura, mediastinum, abdomen, liver and brain are not benefitted by irradiation but are, in fact, often made more ill by the treatment.

There is no question of the real palliative value of irradiation in the treatment of skeletal metastases. For some reason, as yet unknown, breast cancer in bone is quite sensitive to moderate roentgen ray dosage and is almost invariably followed by gratifying relief of pain and with recalcification of the involved bone.

#### Endocrine Treatment

This has been either in the nature of castration,



surgically or radiologically produced, administered either prophylactically or therapeutically, or by the direct use of hormone therapy, both estrogenic and androgenic, usually used therapeutically only. The entire subject is difficult to evaluate, and many conflicting reports may be found. There seems to be a fairly uniform agreement, however, that either x-ray or surgical castration is frequently of benefit to premenopausal women, especially young women and those who are either pregnant or lactating at the time the carcinoma is discovered. The therapeutic value of castration appears to be greater among patients with skeletal metastases with benefit obtained in approximately one-third of the patients treated. Dramatic regression of extra skeletal metastatic disease has also been occasionally reported following castration alone.

#### Summary of Direct Hormonal Treatment

It would appear that androgen therapy is more effective in premenopausal women and that stilbestrol is more effective in postmenopausal women with either skeletal or soft part areas of involvement. The best results from stilbestrol have been reported in elderly women after the age of 65. Enhancement of the effect of irradiation on mammary carcinoma has also been reported in patients simultaneously receiving stilbestrol, and we have noted this also.

Administration of <sup>estrogen \*</sup>testosterone to males with mammary cancer often produces dramatic regression, to the point where some have advocated this as a reasonable substitute for mastectomy. Unfortunately, however, the results of hormone therapy

are not lasting and experience is heralding that already obtained in prostatic carcinoma. The patients who appear to be least of all affected by hormonal therapy are those women at or about the menopause. The results of any form of endocrine treatment among them have been very disappointing.

#### Prognosis and End Results

The outlook for cure in mammary carcinoma is based entirely on whether or not the patient is operable. No inoperable patient will be cured. Hence, this aspect of the problem is related closely to the criteria of inoperability. Most of these criteria are now well known. A patient will not be cured by radical mastectomy and, therefore, should not be operated on who: (1) has distant metastases, (2) has supraclavicular node metastases, (3) has an inflammatory type of carcinoma, (4) has satellite nodules in the skin over the breast, (5) has extensive edema of the skin over the breast or edema of the arm, both of which indicate that the lymphatics are involved to the point of being solidly plugged, (6) has parasternal or intercostal tumor nodules.

Other less ominous but prognostically poor signs are: (1) ulceration of the skin, (2) limited edema of the skin of the breast, (3) fixation of the tumor to the chest wall, (4) large and numerous fixed axillary lymph nodes, (5) pregnancy or lactation.

The end results of any form of treatment in breast cancer must be compared to the survival in untreated cases. Approximately 20 per cent of patients with mammary cancer untreated throughout their entire course will survive for five years. Approxi-

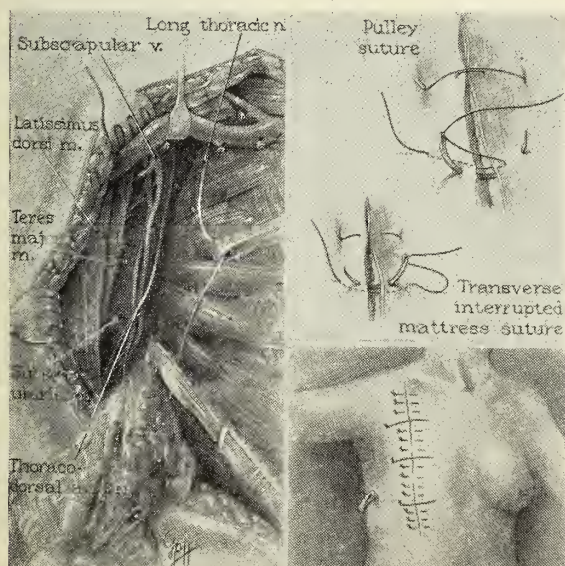


Figure 9. Radical mastectomy: completion of the dissection with both nerves preserved intact. The flaps should be apposed under moderate tension with pulley sutures. A drain is placed from the axillary region out through the lateral flap (lower insert).

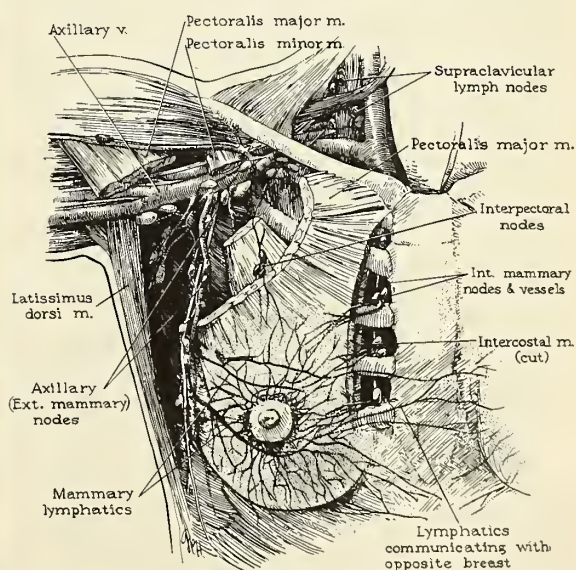


Figure 10. Lymphatic drainage of the breast shows that the internal mammary nodes as well as the axillary nodes represent primary echelon draining areas. Both should therefore be removed if true cancer surgical principles are to be followed.

mately five per cent will survive untreated for as long as 10 years.

Recent reports indicate some improvement in five-year survival to about 50 per cent of all patients operated. About 75 per cent of those having no lymph node involvement may be expected to survive five years. About 40 per cent of those having involvement of axillary lymph nodes may be expected to survive for this same period. Most of the patients dying of disease after five years originally had axillary node involvement.

#### Future Improvements

With the encouragement derived from the more recent aspects of direct hormonal therapy of breast cancer, one can hardly be considered naive for entertaining the thought that eventually some substance, metabolic or otherwise, may be uncovered which will either permanently control or possibly eradicate all mammary cancer. Until such a day arrives, however, there are two courses for immediate improvement available to us.

The first is derived from earlier diagnosis and can readily be assessed when one reflects that the average delay before treatment is applied for with this type of tumor which appears externally and can be readily felt by both the patient and her physician, is still approximately 12 months. This delay is reflected in the fact that approximately 50 per cent of patients appearing for treatment are inoperable and that of those who are operable, axillary metastases may already be found in a little more than 50 per cent. Obviously the answer to this is education of the patient and her physician. Insofar as the education of the patient is concerned, women may easily be instructed in the routine careful examination of their breasts for lumps. The patient and doctor alike must learn that all lumps in the breast past the age of 20 must be considered malignant until proved otherwise.

Surgery of breast cancer can probably not go much farther. Some have recently undertaken to re-evaluate the possibilities of combining supraclavicular lymph node dissection with radical mastectomy. This field was originally explored by Dr. Halsted with no five-year survivals resulting.

Our own attention has recently been attracted to the removal of a portion of the internal mammary node chain in continuity with the breast and with

the contents of the axilla (external mammary node chain), and we have been surprised to find a number of these primary echelon nodes involved in patients who presented an entirely operable form of mammary cancer as measured by the criteria above mentioned. In other words, we have certainly learned one cause for our failures to cure some patients previously operated on by a mastectomy of the usual "radical" sort. Whether or not the routine entering of the chest and the removal of this node chain will add appreciably to five-year survival remains to be seen. We believe that it will and that a re-evaluation of the surgical accomplishments in mammary cancer must eventually be made on that basis. Only the future will tell.

#### Summary

1. The clinical features of mammary cancer have been discussed with emphasis on those which are of practical importance for earlier recognition of this condition.

2. Undelayed operating room confirmation of any suspected lesion followed by immediate radical mastectomy remains the unquestioned treatment of choice. Excision of breast cancers followed later by radical mastectomy seems to impair the patient's opportunity for cure.

3. The operative management of a suspected patient is presented with a description of the technique of a thorough radical mastectomy based on over 500 personally done or supervised cases. Simple mastectomy and compromise "radical mastectomy" have very little place in the treatment of breast carcinoma. It must be realized that success in curing the patient with localized disease is dependent on the surgical treatment alone.

4. Roentgen therapy and the administration of endocrine preparations are valuable adjuncts to the treatment of inoperable cases or of those with recurrent disease.

5. Future improvement will undoubtedly be accomplished and should be easily possible by the simple expedient of earlier diagnosis.

6. A surgical approach involving the en bloc removal of the breast, pectoral muscles, axillary contents and internal mammary node chain offers promise of future improvement but remains to be further evaluated.



## Tracer Research and Cancer\*

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Progress in the treatment of cancer appears to me to be extremely slow. We still have to rely on early diagnosis and treatment with surgery and radiation. During the last 10 years there has actually been very little progress in the means of treatment, except insofar as methods of surgery and radiation have improved. Additional exceptions are the few examples of hormone therapy which Dr. Sugarbaker has mentioned, and the very limited number of instances in which some of the artificial radioactive elements are adding to the armamentarium of therapy. Hence various government and private agencies support cancer research in the hope that it will lead to better understanding of this disease and that better understanding may eventually lead to improved methods of therapy.

Rather than discuss in detail one investigation which is going on in my own laboratory, I would prefer to give you a few examples of the use of tracers in the development of our understanding of cancer. Even though these may be of negligible importance to you as clinicians and to us in research at their present stage of development, these represent examples of ways in which the problem is being attacked.

By means of tracer techniques various substances are labeled with radioactive isotopes, either in simple compounds or inorganic compounds or in the form of labeled hormones, amino acids, or cancerogenic hydrocarbons. By placing counters over the body either of animals or man, these materials may be followed in their course through the organism and the amount of material at any given point may be measured. Another technique for the same general purpose involves taking samples of the various tissues, fluids, or gases and measuring the amount present following the administration of a tracer dose. Extremely small doses of radioactive materials are used in this type of study—doses which are entirely safe, and indeed very little above the amount of radiation you are receiving here in this room now, in the form of cosmic rays and radium in the walls of this building.

In order to illustrate how a tracer can tell you something about the growth of normal and abnormal cells, let us describe a simple experiment in phosphorus metabolism. If we compare the amount of phosphorus in a normal lymph node with a lymph node infiltrated with tumor cells, we find that the

amount of phosphorus per gram is approximately the same. Thus, you can not distinguish between a neoplastic and a normal lymph node by measuring the total amount of phosphorus that is present. If, however, you administer in each case a dose of sodium radiophosphate, the difference becomes apparent. Comparison of the amount of phosphorus present in the lymph nodes and livers of normal and lymphomatous mice, as calculated on the basis of ordinary phosphorus, shows that the values are approximately equal in the lymph nodes of normal and tumor animals, and approximately equal in the livers of normal and lymphomatous animals. By contrast, it is seen that a difference exists between the labeled phosphorus uptake in these two conditions when radioactive phosphorus is injected into the animal. When the radioactive isotope is used, the lymphomatous lymph node takes up an enormous amount of phosphorus, whereas the normal lymph node absorbs very little. As also shown, if the phosphorus uptake is studied for a period of seven days, it will be seen that the phosphorus has primarily gone into the nucleoprotein phosphorus; that is, the phosphorus participating in the building of cell nuclei.

Recent work by two of my colleagues, Dr. Lola S. Kelly and Dr. Hardin B. Jones, is directed toward the breakdown of the fraction of tissue into which this phosphorus goes. Ordinary inorganic phosphorus, when administered to animals, enters many different tissues and compounds in the body including nucleic acids. Particular interest in this research is directed to so-called desoxypentose nucleic acid, which is an important organic nucleic acid having to do with cell multiplication. Phosphorus given to animals bearing a small subcutaneous mammary tumor is very rapidly synthesized into desoxypentose nucleic acid. Phosphorus comprises one of the atoms in the complex molecule of the labeled nucleic acid. The rate of synthesis of the labeled nucleic acid in the normal liver of these animals is very high, just as it is high in the tumor. In a group of normal control animals, the turnover of phosphorus in the desoxypentose nucleic acid is normal; but a tumor weighing as little as 84 milligrams immediately influences the specific activity of the phosphorus resulting in a high turnover rate in the normal tissues. This indicates that the presence of a tumor influences the metabolism of other tissues, even though the other tissues be histologically normal. Cancer patients are now being tested by taking their sera

\* This is a stenotypic transcription of Dr. Lawrence's talk which was given with lantern slides.

to determine whether the factor which causes this stimulation of nucleic acid metabolism in normal tissues can be isolated.

In connection with this phase of our work, the chemists in our laboratory have synthesized radioactive tyrosine. This very important amino acid is labeled with radioactive carbon; while it is like ordinary tyrosine chemically, its course in tissue may be followed and measured by the Geiger counter. Since tyrosine is used in melanin formation, it is conceivable that tyrosine fed to mice might concentrate in the melanomas. Although it seemed unlikely that such concentration would be found, the labeling of the material gave opportunity to learn something about tyrosine metabolism. Dr. Charles Heidelberger and Dr. Hardin Jones have published the results of some of their work on tyrosine metabolism in the *Journal of Cancer*. An interesting highlight of their findings is that when tyrosine was given to mice carrying melanomas, high concentrations of the material did enter the melanoma; but high concentrations also entered the thyroid gland and the adrenals, because tyrosine is not only a precursor of melanin but also a precursor of adrenalin and thyroxin.

Two of my associates have done considerable research on the mechanism of cancer induction in mice through the introduction of labeled dibenzanthracene and methylcholanthrene. Stilbamidine and labeled glucose are also being studied; and a project on cholesterol metabolism is being carried on under the supervision of Dr. John Gofman, not only because of its probable importance in relation to cancer but also because of its obvious significance in atherosclerosis.

In connection with the work with stilbamidine, analysis of the tissues of patients with multiple myeloma, to whom stilbamidine has been given, reveals a tremendous concentration of the stilbamidine in the liver even though the liver is not infiltrated with myeloma cells. A group of experiments were run, chiefly by Dr. John Weaver, to determine why this was true. Radioactive stilbamidine was given to both normal and tumor mice in each of several strains: the A, DBA, C57 and C58 strains. After administration of the radioactive material, analysis of the livers of animals of the A strain carrying even a small tumor revealed a very great concentration of stilbamidine, as compared to an equal group of normal animals. Here then is another example of the remote effect of a small tumor elaborating a humoral substance which stimulates the liver to take up the stilbamidine. We know from previous work, particularly by Snapper, that stilbamidine does complex with nucleic acids.

Another example of a labeled organic acid is brought out in some work using labeled amino acids and organic acids labeled with Carbon-14. Animals are given intravenously a small tracer dose of a labeled organic acid and placed in a small metabolism chamber. All of the carbon dioxide which they exhale during a given period is collected and measured. Actually, the CO<sub>2</sub> is absorbed by sodium hydroxide, precipitated as barium carbonate, and this barium carbonate, which contains the radioactive carbon, is filtered and measured under the counter. The excretion curves after the single dose in normal and cancer animals are similar for most of these labeled organic acids. However, when labeled propionic acid is used, the cancer animals are distinguished from the normal animals by their different rate of excretion of the amino acid in their exhaled air. In this connection it may be observed that our lack of definite knowledge about growth is demonstrated by this problem. Doctor Jones who has been working with this and other labeled acids for about two years is unable to explain the mechanism of this difference. He knows that the breakdown of this labeled material to carbon dioxide and water goes through a different series of stages in the normal animal compared to the tumor animal. The metabolic pathway is different and it is again an example of the remote effect of the small tumor on the general metabolism of that animal. These last three examples are all possible cancer tests and they are now being studied from that standpoint with human serum, with the possibility in mind of finding a humoral agent which will, when injected into animals, produce these measurable changes.

Radioactive cobalt is also valuable as a tracer in the study of normal and abnormal growths. Indeed, the first reliable information on the distribution of cobalt in mice, which causes red cell hyperplasia, has been obtained through its use, since the cobalt can be measured in extremely small quantities in contrast to the difficulty of measuring by microchemical methods. An example of the sensitivity of the method is that as little as two micrograms of cobalt per gram of wet tissue are measured in the mouse liver. The animals are caused to develop a marked polycythemia by chronic cobalt administration; then through measurement of injected radio cobalt, the localization of this element is determined in the various tissues. A fairly high concentration of the cobalt was localized, for instance, in the bone marrow, the site of the red cell hyperplasia. A tremendous polycythemia may be produced by daily injections of cobalt; the red cell count may be as high as from 10 to 17 million.

By means of another technique it is possible to measure as little as one ten-billionth of a gram of an



element in a gram of tissue. We are discovering that there are many trace elements in the body that we had not known were present. There is, for example, gold in the normal animal and in the tissues of the normal human subject. This technique developed by my colleague Dr. Cornelius A. Tobias, consists of taking a sample of blood or tissue, ashing it, and placing it in the atomic pile. Neutrons cause many elements in the sample to become radioactive. The material is then returned to the laboratory and measured for radioactivity, after so-called carrier materials have been added. If one is interested in the possibility that there is a small amount of cobalt in a given tissue, one adds a large amount of carrier cobalt to the sample and precipitates all of the cobalt including that which has been rendered radioactive by induction in the pile. The total sample is measured for radioactivity, and the amount of cobalt which was there before the carrier material was added is calculated from the total induced radioactivity. Elements such as scandium, manganese, zinc and gold have been found in normal tissues by using this technique. Thus a technique has been devised for tracing elements in tissues which is more sensitive than any microchemical method ever used, in the case of many elements.

Labeled material can also be followed by the multiple counter technique. As many as three counters are used over a small animal and four or more over the various parts of the human body. The counting rate is recorded on a revolving drum. In a typical study, one counter may face the thigh, another the liver, and a third the heart. Following the injection of labeled compounds and labeled inorganic materials, the experimenter can get a moving picture of the passage of labeled materials through the body, in terms of site of deposition and rate of movement.

Many investigators, using radioactive iodine, have worked out the classification of goiters and thyroids by the percentage of uptake of the iodine measured by the *in vivo* technique. High uptakes are consistently found in hyperthyroidism, medium uptakes in the normal thyroid, and low uptakes in the myxedematous subject. This widely discussed test may now be done with as little as five mc. of iodine, due to the development of the scintillation counter. Previously it was necessary to use 100 mc. I-131; one of my objections to this test was based on the fact that one does not like to give these high dosages to normal individuals. Now that the scintillation counter, with its much greater sensitivity, is available, we do not object to the thyroid function test with radioactive iodine any more than we do to a basal metabolic rate test, since it is now possible to do it with a small dose of the tracer.

Studies with radioactive iron and radioactive carbon are being carried out, both *in vitro* and *in vivo*. It will be recalled that the body contains normally about three grams of iron, chiefly in the form of red cell hemoglobin; about two and a half grams of the iron is in the red cells, the rest being in other tissues. Four isotopes of iron occur in nature—not radioactive isotopes, but isotopes having varying atomic weight while all are chemically iron. The iron which the clinician uses in the treatment of patients consists of a mixture of such isotopes. Iron may be made radioactive in the cyclotron or in the atomic pile; that produced in the cyclotron has the advantage of a short half-life (47 days)—an important factor since iron is not excreted. The cyclotron-produced iron emits both electrons and gamma rays which have enough energy to permit the measurement of iron movement through the body by placing counters over the living subject.

Studies by my associate Dr. Rex Huff and others with radioactive iron have led to the development of a bone marrow function test now used routinely by us. Within four hours it is possible to measure the rate at which a patient is making red cells; this is important to the handling of many medical conditions and will eventually be as readily available as other clinical laboratory tests. A single dose of iron, perhaps five micrograms containing 10 microcuries of activity (a safe tracer dose) is injected intravenously; samples of blood are withdrawn at half-hour intervals and measured for activity. In the normal patient, the plasma iron gradually decreases with time in a straight line plotted logarithmically; whereas patients with polycythemia vera, who made red cells very rapidly, show an abrupt fall in the amount of plasma iron, and patients with aplastic anemia show a very slow clearance of the iron from plasma. In tracing the route of this iron, a counter placed over the head of the femur shows that as the iron disappears from the plasma it enters the marrow directly, at the same rate that it leaves the plasma; at the end of 10 to 15 days, nearly 100 per cent of the iron has entered the red cells. From such a dynamic picture of red cell production it is possible to determine the number of milligrams of iron used in making red cells per 24-hour period, or the per cent of hemoglobin renewed per day. Normal individuals have been shown to renew about .85 per cent of their hemoglobin per day. This correlates with the known life span of the red cell—normally approximately 120 days. In polycythemia vera, the rate of renewal is as high as three or four per cent per day. It was surprising to learn that some patients with leukemia also manufacture red cells at a rapid rate. In a study of about 75 patients with leukemia, a normal or increased rate of pro-

duction was almost uniformly found. We therefore suspected that in both polycythemia and leukemia the life span of the red cell is less than normal, and in leukemia, it must be markedly less since the leukemic patient is often anemic in spite of a normal red cell production rate. In cancer also, we found an indirect effect upon red cell life which may account in some cases for the anemia of cancer.

A direct approach to the problem of red cell life span in cancer involves the use of glycine labeled with Carbon-14, in animals and man. This amino acid enters the hemoglobin molecules and remains there as long as the red cell lives. Weekly samples of blood show the same rate of activity until the death of the cell. In normal blood, the life span of the red cell as studied by this method was shown to be about 120 days, confirming earlier findings; leukemic and polycythemic patients, however, have been shown by this method to have red cells with a short life duration. The anemia which occurs in several clinical conditions has thus been shown to be due not to the failure of red cell production but to the curtailed life span of the erythrocytes. This is an example of the changes produced by cancer in animals and in man.

The problem in polycythemia vera is not one of typical cancer, but rather of abnormal growth; and as we are trying to learn more about growth, we have made numerous studies of the various types of polycythemia, including the polycythemia of altitude. During February and March, 1950, we made a study in Peru of the effects of altitude on hematopoietic activity. We set up a laboratory, using the facilities generously lent us by Dr. Alberto Hurtado, of the Academy of Medicine, Lima, at each of two places: one at Lima, which is at sea level, and one at Morococha, which is at 14,900 feet. Studies were made on normal subjects living at sea level, both in their natural habitat and after acclimatization to altitude; on other subjects with the polycythemia of long duration at high altitude, both in their native habitat and at sea level; and on patients with altitude polycythemia combined with silicosis resulting from work in the mines. Some of the latter had polycythemias resulting in red blood counts as high as nine million cells per cubic millimeter. We were interested in comparing the "neoplastic" type of polycythemia vera with so-called environmental polycythemia. The hematocrits were as high as 83 per cent; the blood so viscous that it had to be withdrawn with No. 16 needles and then with difficulty. The hands and skin color showed extreme pinkish cyanosis, due to the great mass of red cells in the capillaries.

A group of medical students from the University of San Marcos, Lima, served as our experimental sub-

jects representative of persons living at sea level; miners from the Cerro de Pasco mines served as representatives of individuals living at 14,900 feet. Iron metabolism studies showed an immediate increase in red cell production due to anoxia on moving to altitude from sea level. A striking effect of anoxia on growth and an immediate decrease in red cell production on descent from altitude to sea level were observed as the effect of increasing oxygen tension in the atmosphere. The effect on iron metabolism of an increase in available oxygen is such that in a subject moving from altitude to sea level the decrease parallels that in a patient with aplastic anemia.

A study of the movement of iron *in vitro* reveals that in normal subjects over 90 per cent of the iron enters the red cells; in a patient with aplastic anemia, the iron leaves the plasma but does not concentrate in the red cells. In one case of aplastic anemia, for example, only one-tenth of the iron may go into red cell production.

*In vivo* studies of normal subjects and patients with abnormalities of erythropoiesis have been made by Huff and associates by placing a counter over the sacrum, which contains the largest mass of marrow in the body, and also over areas such as the liver and spleen. In one polycythemic patient with a hypoplastic marrow, the red cells were being produced in the spleen as evidenced by these iron studies. In the normal subject, the curve of uptake of radioactive iron rises as a function of time; but in the patient with extramedullary hematopoiesis, no such rise occurs within the sacrum. A patient with anemia revealed a hypoplastic marrow and hypersplenism. The iron disappeared from the blood, entering the liver to some degree but chiefly the spleen. Practically all patients with myelogenous leukemia produce their red cells in the spleen and liver, the sacrum taking up no iron and thus producing no red cells.

A localization study of the uptake of iron by various parts of the body enables us to classify individuals according to the site of red cell production. The normal subject has the largest uptake at the sacrum, which is the site at which the largest amount of marrow is normally concentrated; in aplastic anemia the sacral marrow typically reveals a very small red cell production and a high concentration of the iron in the liver; the polycythemic produces many erythrocytes in the spleen, as shown by the high uptake of iron in the spleen; the myelogenous leukemia patient produces few red cells in the marrow but concentrates the iron and the red cell production in both liver and spleen. In this way growth rates and sites are being measured—that is with reference to red cell production.



In conclusion, with the microscope it is possible to see cells; with the radioactive isotopes, used as tracers, it is possible to begin to learn what is going on within the cells. The technique is powerful.

Through the use of tracers in organic compounds, I believe that gradual progress will continue to be made in the understanding and treatment of cancer.

## The Diagnosis of Accessible Cancer

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The title of this presentation was chosen deliberately to highlight the fact that most cancers affecting the human body are accessible.

The diagnosis of cancer is not actually a difficult problem. To every one of us practicing medicine, it is essentially a matter of physical examination, using the aids of instrumental examination that are available to us and having a high index of suspicion for any given lesion. The final diagnosis of cancer depends actually on a biopsy, and that is one of the simplest maneuvers that we can do. I think the AMA fracture manual has the motto "Splint them where they lie;" in cancer, it is biopsy as the first thought, and it is a simple maneuver and frequently does not even require local or topical anesthesia.

Now I said that most cancers affecting the human body are accessible, and I mean this in the sense that they are visible to the naked eye, palpable, or within finger reach of palpation. If you add to that the cancers that can be visualized with instruments which do not have optical systems (such as the proctoscope), the percentage increases; and if we add those that are visible by use of the cystoscope, gastroscope, and bronchoscope, eliminating the x-ray, you will find that about 85 per cent of cancers that affect humans are accessible. They should not be a difficult problem in diagnosis; any one of us can do it and it doesn't require numerous consultants, a long history, and stroking our long white beards for days to think about it.

I should like to go over a group of slides illustrating what I choose to term accessible cancer. Cancer of the skin is obviously accessible, and occurs in the area of the body most commonly exposed—the face. Here is a lady (slide) who illustrates the most common problem of skin cancer in that it is multiple. We know clinically that once a patient has had cancer of the skin, such a patient, if he lives long enough, is going to develop another one, and they are very frequently multiple. Now, this lady has at least five separate lesions that occur in the typical senile atrophic skin with senile keratosis. This lady had been treated for some months with injections of B complex without a biopsy, so

this tumor was allowed to go ahead and destroy both thicknesses of the nose in this area. A biopsy of all these showed squamous cell carcinoma. These, we thought, would be simply keratoses, but in the base they had invasive cancer. These were all treated with radiation. A photograph post-radiation (slide) shows that when cancer replaces tissue in toto, and it is destroyed, it leaves a hole, and this has to be repaired; this is almost through the buccal mucosa, but not entirely, and it healed. She has remained well for many years and contrary to my suggestions, she has not so far developed any new carcinomas.

Here (slide) is an early basal cell carcinoma of the lower eyelid. In a characteristic location, it has typical raised borders and central ulceration. There is no problem here in the diagnosis at all. A drop of procaine, a No. 11 Bard-Parker blade, and your diagnosis is made if there is any question about it. We have a rule that we don't radiate patients without a positive diagnosis if it is obtainable, so we even biopsy such lesions. Here is another (slide), even earlier, with typical rose-gray translucency of the tissue which is characteristic of the basal cell carcinoma, again in a typical location. Biopsy makes the diagnosis, and that is all we need to do as far as diagnosis is concerned. Our first reaction on that should be cancer, biopsy, and then treatment.

If you leave such a tumor alone—let it grow to see if it is going to turn into a cancer—this (slide) is what you will eventually have from such a lesion, eye destroyed or the tissues invaded, and face extensively involved. That is the natural history of these tumors, and we must diagnose them clinically in the preceding stage before they do such destruction. This (slide) is a basal cell of some 12-14 years duration treated repeatedly over a period of years with inadequate doses of radiation and now with the eye gone, frontal sinus exposed. This man was dead some months after this photograph was taken; I show it not as a diagnostic problem but simply to illustrate the reason for diagnosing these early.

Another typical location is on the ear. This (slide) is a characteristic squamous cell carcinoma arising usually from keratoses which develop from exposure

to sun, wind, frost bite, etc. There should be no problem about diagnosis, but the legal diagnosis, the 100 per cent diagnosis, is made right there by a little biopsy, which can be done in any office in about two minutes. If you don't make the diagnosis but leave it alone, this (slide) again is the natural history of such a lesion. This poor man had gone for two or three years with a carcinoma of the ear which started out exactly like the preceding one, and now in this stage it was incurable. We tried a quixotic attempt at a radical procedure, but it was perfectly useless in this stage. He died in a few months.

Salivary gland tumors are accessible. They are palpable. I want to impress on you that any palpable mass in the parotid gland must be investigated. Most of them are benign mixed tumors, but these will grow over a period of many years and they can undergo malignant transformation. But one in five—20 per cent of masses in the parotid—are primary carcinomas, and the patient's only chance to preserve the facial nerve is to remove that benign tumor early, before it damages the facial nerve. The treatment is surgical and not radiation, as was done in an attempt to eliminate this tumor (slide). This man has complete facial paresis from the carcinoma of the parotid, although it isn't easily apparent.

Carcinoma of the lip certainly qualifies as an accessible cancer. This (slide) is an exceedingly early case, simply a plaque, hardly even ulcerated—just a persistent change in the mucosa with a little thickening and a little beginning ulcer. Now, a "cold sore" that persists over a period of weeks should be biopsied.

Carcinoma of the lip is not common in the female, but it does happen, and an ulcerating, persisting lesion on the lip should be subjected to biopsy because it is apt to be cancer of the lip.

The multicentric origin applies even to lip cancer. This (slide) is a low grade, well differentiated squamous cell cancer of several years duration which has not had any treatment whatsoever. It amazes me what some of the human race will tolerate. This lesion (slide) definitely started in two areas. Now we don't realize the multicentric origin of cancer too often because the early foci of growth coalesce to form the single tumor that we see clinically; yet it is apparent here that there is a division and on the history he had two separate ulcers—two foci of origin which coalesced to form the large tumor that we see clinically. In my mind, this is past the point of radiation management of lip cancer. To most of us, the indications for radiation or surgery are the opposite to what we frequently think. We see early small lesions on persons who come into the office, and we say, "That is simple; we'll take it off with a local." That is perfectly true and that lesion can

equally well be treated with radiation. Somebody comes in like this (slide), and we stop to think of the commissures involved, and feel that surgery would require a rather brutal excision and plastic repair. Our tendency is to say, "Well, let's see what radiation will do." That is an error. These are obligate surgical problems—the large, extensive, low grade exophytic squamous cell carcinomas of the lip.

This prepossessing individual (slide) shows again what the human race will tolerate. This is a carcinoma of the entire lower lip, requiring extremely radical excision, and radiation will not do it in a high enough percentage of cases to make it worth while to try. And if you have tried heavy irradiation and it fails, as it usually will in this type of case, then the problem of surgery is greatly compounded—the problem of plastic reconstruction, swinging of skin flaps and trying to skin graft, and the pulling up of two pedicles is an exceedingly difficult situation with irradiated tissues.

Early lip cancer, or even moderately advanced lip cancer, is curable in a high percentage of cases. We should run around 85 to 90 per cent cures in early cases; the over all salvage is probably 70 to 75 per cent. This man (slide), only about 43 years of age, appeared in the clinic some years ago in the latter part of January, and he said he had a little fissure on his lips for a few weeks before the preceding Christmas, only six to eight weeks duration of which he knew, and it looks like a relatively early lesion; and yet that cancer involves an extensive area. When you examine it and palpate it, you actually can see it. It is a grade three to four lesion and he has bilateral, fixed cervical node metastases. He was dead within a few months. There is not much we can do for this type of patient.

This oral cancer (slide) certainly is accessible, and only requires looking for it and having the patient open his mouth. It is a typical buccal mucosal type of lesion, a low grade, probably a verrucous type of carcinoma such as Ackerman has described. It is a squamous cell as about 90 per cent of the tumors in the mouth are. It arises in a leukoplakic area which you can see, and there is ulceration posteriorly. Now there is no problem in the diagnosis of that at all, and even though the man has a positive Wassermann test don't let that red herring keep you from doing a biopsy. Always biopsy such a lesion and you will have a diagnosis in 100 per cent of the cases with minimal effort on the part of anyone.

Here (slide) is one of the tertiary syphilitic lesions, atrophic glossitis with leukoplakia. Carcinoma of the tongue is associated in about 30 per cent of patients with tertiary lues. Leukoplakia in itself is not harmful, and some leukoplakias are



simply a reaction to irritation such as a callus in the skin, and when the irritating factor is removed (smoking, jagged tooth, bridge work or something like that), the leukoplakia will clear up. Persistent, irreversible leukoplakia, however, is dangerous, and particularly whenever there is any atypia microscopically on a biopsy it should be destroyed. We see individuals with leukoplakia all through the oral cavity, tongue, buccal mucosa, palate, floor of the mouth, and gingiva, and it is simply impossible to cauterize the whole mouth. These patients must be watched rather closely throughout their lives, doing everything we can to stop them from smoking and that sort of thing and encouraging high vitamin intake. When the leukoplakia begins to change in any given area, biopsy it, and if it is cancer, then treat it at that point.

Here (slide) is a luetic glossitis with leukoplakia, with a quarter sized carcinoma arising right here. This is certainly accessible. Biopsy and diagnosis is a simple maneuver, and treatment is relatively simple; radiation to that can be given just as it can to skin cancer. There is also the problem of multiple origins, such as this man (slide) who eventually developed cancers all through his tongue and was simply uncontrollable. In patients with lues, we tend to use surgery rather than radiation in tongue cancer. The cure rate in carcinoma of the tongue is exceedingly bad by either radiation or surgery.

Now here (slide) is a typical carcinoma of the tongue, on the lateral border, in about the middle third—a raised plaque-like lesion ulcerated in the center. These aren't painful in the beginning and the patient doesn't realize what is going on. Of course that subtle problem—lack of pain—is one of the main difficulties of early diagnosis of carcinoma, even in areas such as the mouth which is an exceedingly sensitive spot in the body. The lesion is hard to palpation and its outline can be delineated rather easily by palpation. Biopsy diagnosis certainly is simple, and is obligatory.

Again (slide), this is a case of atrophic glossitis, leukoplakia and a peculiar form of infiltrative carcinoma that you see in luetic tongues, with little surface infiltration or surface ulceration, and wide muscular infiltration throughout a wide area in the tongue. Again, biopsy is the way of diagnosis.

A floor of the mouth lesion is accessible, and biopsy is simple. If you biopsy in the tumor itself, you don't need any anesthetic; there are no nerves in the tumor. If you take some normal tissue, you will need a little topical pontocaine and perhaps a little procaine infiltration, but the biopsy in the center of the tumor needs no anesthetic whatsoever, and is perfectly adequate for diagnosis.

These buccal mucosal lesions, if untreated, go

right straight out through the cheek, destroy the whole side of the face, metastasize as you see here (slide), and are of course 100 per cent fatal.

The problem of diagnosis of tumors in the neck is a common clinical one which is seen frequently. In approaching the diagnosis of a lump in the neck, we should start with three premises: (1) exclusive of goiter, most persistent tumors in the neck, in the adult, are malignant; (2) most malignant tumors in the neck are metastatic; (3) most metastatic malignant tumors in the neck come from the head and neck area.

It is perfectly true that almost any malignant tumor in the body can metastasize to the cervical area, but the great majority come from the head and neck, mainly intra-oral and pharyngeal or laryngeal. The first thing we do with a lump in the neck is to examine it by palpation and visual inspection and then examine the head and neck area. I think every physician should be capable of doing a rapid and adequate examination in the oral cavity, and at least visualization of the larynx as a routine part of the practice of medicine. The second step is examination of the head and neck area including the skin, sinuses, mouth, lips, etc. After that comes the general physical examination, if we haven't found the primary, and after that a chest film, blood count, etc. Then and only then we may pick up the knife, but the first approach to tumor in the neck is not incision to see what it is.

Here is a man (slide) with a mass in the neck who had been treated for Hodgkin's disease on a clinical diagnosis, receiving radiation. Nobody looked in his mouth, but he had a huge squamous cell carcinoma of the tonsil that you could smell for 25 feet when he did open his mouth.

There (slide) is a persistent mass in the neck, for which, after going through all the maneuvers I have outlined, I could find no cause. This is a bronchial cleft cyst, entirely a benign lesion. The usual history is that they have been seen, and the mass incised. The first physician encountered the typical creamy material of the cyst, said he thought he had an abscess, and it drained. The wound healed, and the cyst promptly filled up again. The second physician opened it, again drained it, found the so-called pus, took a culture which was negative, and thought, "Ah, tuberculosis." So he treated the patient with x-ray and streptomycin. Eventually, when the cyst filled up again, the next person to look at it either aspirated it or examined the material and found that it had cholestrin crystals and shadow cells of squamous cells and he had a branchial cleft cyst which had been radiated, incised, secondarily infected, and could be an exceedingly difficult problem to remove, whereas in this state, in the virgin

cyst, it is a simple operation, requiring only removal of the entire cyst wall.

Not all tumors in the neck are metastatic, of course. We could find no cause for this (slide) obvious carcinoma. Biopsy showed a rather undifferentiated lesion, thought to be an adenocarcinoma, and it was finally decided it must be a primary carcinoma of the maxillary salivary gland, which it was. The jaw bone was infiltrated, and there were metastases in the neck aside from this primary mass. A radical neck dissection with excision of the mandible on that side has resulted in a cure of some five or six years now. Even with ulceration to that extent, you can salvage these individuals occasionally. But if you don't, the natural history of these neck masses is this. This old gentleman (slide) had a carcinoma of the posterior tongue with cervical node metastases and this is just about to break down. This is perfectly hopeless, untreatable by any method that I know of today. He is a palliative, terminal care problem.

Malignant melanoma is a problem in diagnosis. It is a problem in therapy too, but we must be on the alert in this type of lesion. Here (slide) is a persistent subungual ulceration with destruction of the nail. We must think, not of fungus disease, but of malignant melanoma (melanotic whitlow), even though it is non-pigmented. (As most of them are, actually, in the subungual area in my experience.) Biopsy here will give us the diagnosis, if there is any question about it, and I think that in such a lesion it is far better to biopsy this than to amputate the finger and find out that he did have a fungus infection. However, this is malignant melanoma.

You find most melanomas in the extremities of the body, the feet, hands, or in the head and neck area. They occur anywhere in the surface, of course, but the majority in the distal areas of the body, using the zyphoid process as a central location. Now this (slide) shows the pigmented and non-pigmented melanoma. The diagnosis is perfectly obvious, and there should be no question about it.

Here again (slide), is a persistent ulcer starting from a little black spot on the under surface of the toe. This man had been treated for athlete's foot. He had every sort of ointment that I have ever heard of and had been treated for a period of six months; he had hot baths, hot soaks, everything for this thing, but nobody took a biopsy. Nobody realized that this might be a melanoma, whereas it should be our first thought. This, of course, was melanoma, and although a radical amputation was done, the man had disseminated melanomatosis in a few months, and expired from this tiny primary lesion.

There are two features of these diagnoses of malignant melanoma for which we must watch. One is that when a mole that has been present begins to change, with almost any change except disappearance, we should be suspicious of melanoma. The trap to avoid in making a diagnosis is that of removing the mole "just semi-widely" because you are suspicious of malignant melanoma. Don't do that; if it is benign, then you have done unnecessary destruction, and if it is malignant, you haven't done enough. If it comes back malignant you are apt to say, "Well, we went a little wider than usual, we will wait and see." You are required to sign a death certificate shortly thereafter. If a mole is suspicious, remove it as you would a benign mole, and don't throw it in the wastebasket, but have it sectioned. If it is benign you have done enough, but if it is malignant, then really do a job that is adequate for a melanoma.

The second point to keep in mind is the occurrence of a mole in an adult where none previously existed. This (slide) is such an example in a 45-year-old man. Two years before he developed this pigmented area. Gradually this corona of brown, non-raised pigmentation appeared about it. You can make a clinical diagnosis of malignant melanoma on that. When a slate grey or pigmented area surrounds a mole, or when it begins to infiltrate the skin around it where it isn't palpable, and it is not raised, look out; that is a malignant melanoma. This was treated by wide excision and grafting and he is all right so far for five years.

This (slide) is an example of what I mean. Here is a nevus that had been present since birth in a man of about 50. It began to change, developed a little serous exudate from the surface, and here is the corona of the grey to greyish brown pigmentation about it. That is characteristic and makes a clinical diagnosis of malignant melanoma for you. This was treated by excision and dissection in continuity. Situated close to the axilla, there were only a few cells in the periphery of one lymph node, and so far he has been well about six years. I think Dr. Pack is in the audience, and this is his operation, by the way. He devised it, and it is one of the few advances in the treatment of malignant melanoma in recent years of which I know.

About once a year I get burned on the diagnosis of basal cell, and since we always biopsy them, about once a year I find that a "basal cell" is a non-pigmented melanoma and the difference is, believe me, important.

Breast cancer is certainly accessible cancer; I am sure Dr. Sugarbaker has covered this subject for you, but if you will indulge me, I will point out a few things. This accessible cancer is on the surface,



and some of the diagnostic points are visual, though the important one of course is simply the palpation of a lump. Here (slide) we see the shortening of the breast compared with the other, with a suggestion of spontaneous skin dimpling, and there is some flattening in the lateral contour. Those are all signs of carcinoma. The skin dimpling is perhaps the most important. If it is not apparent with the breast dependent or with the arms raised, if we move the breast about the tumor or move the tumor within the breast, we frequently will produce the skin dimpling. Now that is one of the most important signs of mammary cancer. It is moderately advanced cancer, but nevertheless it is one of our best aids.

If the tumor is allowed to progress, of course, spontaneous dimpling and even retraction will occur. There is no question but that fat necrosis will do it, of course, but even though with fat necrosis you can make a pretty clear clinical diagnosis, you do have to biopsy to be sure you are not dealing with a carcinoma. When you can make a clinical diagnosis of mammary cancer, you are dealing with advanced mammary cancer. It is the solitary, small mass which is clinically non-diagnostic; that is the lesion to biopsy in order to find an early and curable mammary cancer.

Again, here (slide) are spontaneous retraction, flattening of the lateral contour, shortening of the breast and axillary metastases. You don't need to biopsy this. You can make a clinical diagnosis and do a straight radical mastectomy, but the best chance for cure is long gone, and the percentage salvage rate on such a situation is not what we would like to see in breast cancer.

Other mammary cancers, rather than causing retraction due to fibrosis, will produce a bulky tumor which will infiltrate into the skin, and they will, of course, ulcerate right through the skin, as we all know.

Here (slide) is an uncommon form of mammary cancer, but the worst type there is—the so-called inflammatory mammary cancer. We may find only a faint blush of the skin which resembles an erysipelas. Usually in the early stages such as this, it isn't palpable even like an erysipeloid reaction or true erysipelas is, and not infrequently we cannot find the tumor in the breast. In the advanced stages, of course, we eventually will. This type of cancer is almost incurable, even in this early stage. There is something about the potential of this cell that makes it spread widely in the lymphatics. Surgery is practically useless when we find this type of mammary cancer, but even here it might not cause much suspicion at all unless you were well aware of the problem.

Carcinoma of the hands is not as common as on the face, by any means, but again it is the most exposed part of the body and it is the second most common site of skin cancer. Basal cell carcinoma rarely occurs about the hands. It does, but it is exceedingly rare, and most of these are squamous cell carcinomas or epidermoid carcinoma. I use the two terms synonymously. There is no problem about the diagnosis; the biopsy of the edge here is a simple maneuver, and you know exactly what you are dealing with. That should be our first reaction always in such a lesion with the history that it has been there some weeks.

Here (slide) are multiple carcinomas of the hand in a case of long standing chronic arsenic poisoning. This condition will produce widespread skin carcinoma and is an exceedingly difficult problem to treat; it is an irreversible cellular change apparently, and produces multiple carcinomas over the body, particularly about the hands first. You can see the keratoses which are typical. If we leave these alone long enough, and don't biopsy them, diagnose them, and treat them, their natural history is this sort of situation. This man had a few little axillary metastases, and a fore-quarter amputation was done some three or four years ago. So far he is still all right, but you cannot temporize with these lesions.

Carcinoma of the plantar surface of the foot is exceedingly rare. I should think that malignant melanoma of the plantar surface would be more common, but here is a squamous cell carcinoma of the plantar surface. Again it is certainly accessible, it is on the surface, and biopsy will make the diagnosis.

Soft part sarcomas are palpable in the beginning, and will become visible if left alone long enough. There should be no problem in diagnosis, and yet here (slide) are the scars of three previous excisions in which the surgeon apparently did not take the pathologist seriously enough. Now there is the inevitable recurrence and bone fixation requiring an amputation. This was a neurogenic sarcoma in an old gentleman 80 years of age. He did not die of his tumor; he lived about three years but the cancer did not kill him.

There are other lesions which are also accessible cancer, but time will not permit discussing them all now. Included in such tumors would be lesions of the cervix, vulva, penis, anus, rectum, prostate.

So, I would like to summarize by trying to emphasize that diagnosis of accessible cancer actually should not be a difficult procedure; all we have to do is think of it in a given situation, and where it is accessible, biopsy it.

# Tumors of the Spine and Spinal Cord—With a Discussion of the Diagnostic Significance of Back Pain\*

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## Introduction

In the great category of patients whose diagnoses have been too long unsuspected or even missed entirely, it is probable that those whose earliest symptoms were common everyday complaints probably lead the list. All too familiar examples are the slight cough of early bronchogenic carcinoma, the mild indigestion of some cancers of the stomach and the equally slight constipation of some malignancies of the large gut. Just as weight loss and evidences of luminal obstruction are usually late manifestations, so indeed are the weakness and numbness of the extremities in tumors of the spine and spinal cord. Hindsight, which is so much clearer than foresight, and of great value to the physician even if not to the individual patient, frequently reveals that our error lay in a failure to appreciate the significance of a pain in the back. The early diagnosis of neoplasms of the spine and spinal cord, therefore, often devolves about the question of backache.

Osler once remarked that headache might be caused by anything from a high hat to an adherent clitoris; it might with equal propriety be stated that backache may be due to anything from Pott's disease to a pot gut. It would be appropriate at this time, therefore, to consider the mechanism of some pains in, or at least beginning in, the back.

## Neural Pathways Involved in Back Pain

It is pertinent at this point to consider the nerves which mediate and/or refer backache. One or more sensory roots may be compressed by a tumor or by a particle of displaced bone. In such an instance the pain is likely to be located not only over the lesion but to be referred to any or all points along the distribution of the involved nerves. Thus, compression of the eighth or ninth right dorsal nerves may result in pains felt principally about the right upper quadrant, one of the many situations where their significance may understandably be missed. Should both the right or left nerves over one dorsal segment be involved, the pain may circle the body as a belt and be described as a "girdle" pain.

A much more widespread but no less severe type of pain may result from inflammation. The products of infection or the sterile meningitis produced by blood in the subarachnoid space irritate sensory rootlets, resulting not only in the well known pain

in neck and back but quite frequently in its radiation into the shoulders and hips.

A feature common to pain of intraspinal origin, whether due to pressure or to inflammation, is increase by sudden elevation of intraspinal venous pressure. Thus, coughing, sneezing, compressing the jugular veins or lifting will often precipitate or increase such pain.

## Nerve Supply of the Vertebrae and Their Ligaments

The fact that a bone can be sawn or a ligament cut without producing pain proves neither that they have no nerve supply nor that they cannot give origin to pain. It is simply a question of the type of stimulus applied. The gut is a pertinent example: it may be cut or burned with little or no discomfort to the conscious patient, but let it be distended or its mesentery tugged upon and the story is different. Neoplasm, infection, arthritis, and certain types of disk disorders result in pain which is very real and of great diagnostic significance. One should remember that this pain may be brought about either by involvement of the intrinsic nerve supply of these structures or by mechanical compression of adjacent sensory nerves.

*The innervation of posterior longitudinal ligament and annulus fibrosis* has been worked out in some detail by Roofe, an anatomist who suffered from a ruptured intervertebral disk, as a token of gratitude to his surgeon. It was known that the spinal dura received a sensory branch which left the nerve distal to the posterior primary division, returning through the same intervertebral foramen. Roofe discovered numerous unmyelinated fibres of similar origin which were distributed both to the posterior longitudinal ligaments and to the annulus fibrosis of the two subjacent vertebrae. No end organs were found and it was believed that these were pain fibres. While on anatomical and clinical grounds there is reason to believe the anterior longitudinal ligament and the articular facet joint capsules are similarly innervated, there is yet little experimental confirmation.

A very clever method of demonstrating the origin of referred pain was employed by Sir Thomas Lewis and his pupil, Kellgren. By injecting a few small drops of a strongly hypertonic saline solution into the interspinous ligaments about the spinal column under radiographic control, they believed they demonstrated reference into the corresponding dermatomes.

\* Figure 1 published originally in Archives of Surgery and the remainder in the New York State Journal of Medicine.

\*\* From the Department of Surgery, Albany Medical College.



### Relation of Spinal Nerves to Vertebral Structures

Where the spinal nerves emerge through the intervertebral foramina they are covered with a tough sleeve of dura and provided with ample room for all physiological needs. Since nature abhors a vacuum, this space is filled largely with fat and huge extradural veins, both readily compressible. The intervertebral foramina may be narrowed in various ways: by pus and granulation tissues as in Pott's disease, by benign tumors such as neurofibromas or meningiomas, by vertebral tumors such as giant cell "sarcomas" or metastatic malignancies which both expand and destroy bone, and by certain malignancies such as carcinomas and lymphomas which are deposited extradurally and form constricting collars about both dura and emerging nerves.

### Distribution of Pain in Spinal Nerve Compression

The vertebral periosteum undoubtedly contains pain fibres, as can be demonstrated by the prick of a long needle or the disposition of a few drops of hypertonic saline upon it. Lewis and Kellgren believed that pain of such origin would be felt locally if the involved periosteum were superficial but segmentally if deep. In the majority of instances, however, pain experienced along a dermatome will be found due to nerve root compression. Should the pain be associated with paresthesias in the same area, one can, in our experience, be pretty confident of direct nerve involvement. Such a combination is of localizing value comparable to a light on the telephone operator's switchboard: the origin of the call may be uncertain but the party line on which it comes in is obvious!

### Primary Tumors of Spinal Cord

Tumors of the spinal cord may be conveniently divided into two general groups, the intramedullary, which arise from the cord itself, and the extramedullary which, as the name implies, grow from adjacent tissues and neural structures as their size increases.

*Intramedullary Tumors.* Whereas in the brain gliomas are far more common than dural tumors, the reverse is happily true in the cord. Quite a few gliomas, such as ependymomas and astrocytomas, may be relatively benign, and if discovered in time, can be successfully removed. As distinct from many other spinal canal neoplasms, these lesions produce little pain, save when their posterior extension involves the dorsal rootlets. As the result of interference with the long conduction pathways, however, disorders of strength, sensation, coordination and sphincter control are manifested early. While yet relatively small there may be no block on lumbar puncture, and in the customary absence of x-ray changes it is readily understandable how these lesions may be confused with multiple sclerosis, com-

bined system disease, syphilis and the Guillain-Barre type of multiple neuritis.

At this point it may be of interest to call attention to the fact that whereas the significance of the failure of a lumbar spinal fluid pressure to rise following jugular compression is well known, its corollary, the absence or delay of fall in pressure after jugular release, is sometimes overlooked. Such an oversight is most unfortunate since it is definitely abnormal and signifies a subtotal or incomplete block. The spinal fluid protein is almost always elevated in the presence of a tumor; multiple sclerosis and combined system disease seldom raise protein greatly, although the Guillain-Barre disorder does so conspicuously.

*Extramedullary Tumors.* There are few, if any, lesions the prospect of which so gladdens the heart of the neurosurgeon as the extramedullary tumors. Since many are benign and very slow-growing, much may be expected toward recovery of useful function following their removal. Meningiomas and, particularly in the lumbar region, neurofibromas, are quite common. Owing to the fact that they increase very slowly in size, the adjacent neural tissue may be compressed or thinned quite out of proportion to the degree of functional loss. Thus it is not unusual to find the cervical cord compressed a third, or even a half, by a meningioma with surprisingly little loss of use of arms or legs. Because of the fact that early sensory losses are usually distal, the clinical localization of the lesion is often several segments too low. Backache and root pains, sometimes girdle pains, may result from root compression. Girdle pains, when present, are of great value in determining the level of the lesion. If there be a reasonable suspicion of a spinal cord tumor a myelogram should be performed. It is one's duty to consider any such neoplasm benign (and hence curable) until demonstrated otherwise.

### Malignant Tumors

Until someone invents a counterpart to the Geiger counter which will register mitoses, the first signals of many cancers will arise from their metastases. Malignancies of the lung, the greater curvature of the stomach, the body of the pancreas, and the prostate are all too familiar examples of these long silent primary tumors, whose first clinical signs are metastases. Certain new growths, particularly those of the breast, thyroid, kidney, and prostate, have great proclivities for bone. Hodgkin's disease often involves bone, more especially the spine.

*Mechanism of Metastasis.* Aside from direct extension from contiguous primary or secondary malignancies, tumor emboli must reach the interior of bone by the bloodstream or by the lymphatics. The name of von Recklinghausen is attached to the

hematogenous theory, while that of Handley is associated with the lymphatic. The implication of the lymphatic channels came as the result of a study of breast carcinoma in which it was claimed that bony involvement resulted from extension from adjacent fascia. A later and very elaborate study of similar material by the great Australian tumor pathologist, Rupert Willis, failed utterly to substantiate these claims. Actually it has never been possible clearly to demonstrate lymphatic vessels in adult bone.

In 1927 the senior author studied periosteal lymphatics in a variety of animals, including man. Many typical channels were demonstrated in the periosteum, particularly in the very young. The richest network was found near the epiphysis in growing bone and it was only at this point that lymphatics were ever found beneath periosteum (Figure 1).

Since metastases show no predilection for the epiphysis, and since it is highly unlikely that lymphatics are present in adult bone at all, some other

explanation must be found. In our opinion, the hematogenous theory of von Recklinghausen, as broadened by the venous tidal concept of Batson, most nearly explains the mystery. According to this idea, for which there is much corroborative evidence, tumor emboli having gained entrance into local veins, as is so often observed, may reach bone not only via lungs and arteries, but by local gravitational and tidal backwash may pass in retrograde fashion from terminal branches of systemic veins draining the region of the primary tumor into small branches of the vertebral system of veins with which they connect. From here the emboli pass directly into the huge vertebral and extradural venous network. The channels are there and readily explain the oft-observed tendency of certain carcinomas, such as those of the prostate and breast, to fetch up early and extensively in subjacent portions of the spine or pelvis. A cranial or cerebral metastasis may thus bypass the lung.

*Pathology of Metastases.* Individual tumors, and even individual metastases, vary considerably in their effects on adjacent bone. Areas of erosion may appear in the x-ray as clear cut, punched out, ragged, or moth eaten, with or without condensation or proliferation of bone. Occasionally increases in bone density are obvious and little or no rarefaction is visible. Pathologic fracture occurs in vertebrae as it does in long bones but less often displays a tendency to heal. Either the vertebral body or the neural arch may be involved; the intervertebral disk is

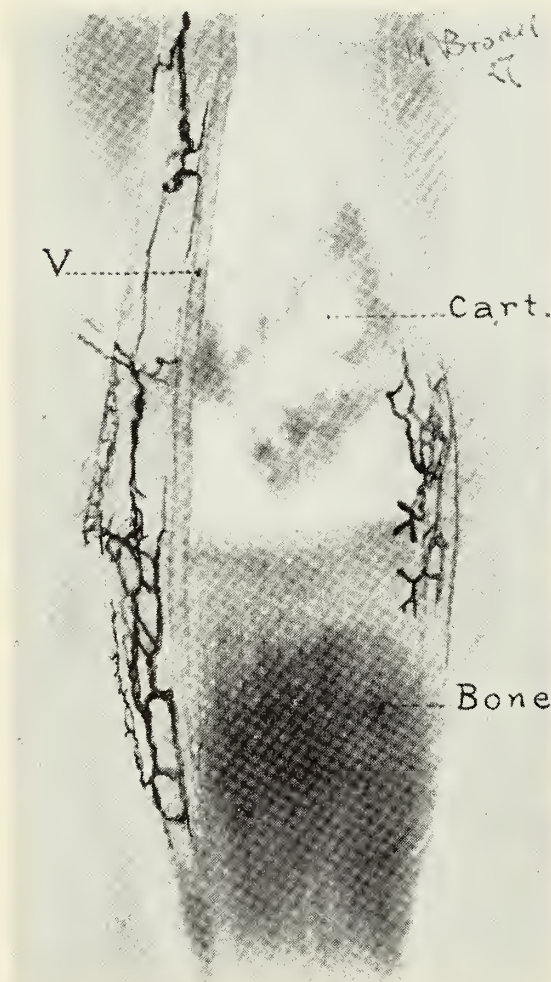


Figure 1. Lymphatics of periosteum at costo-chondral junction.

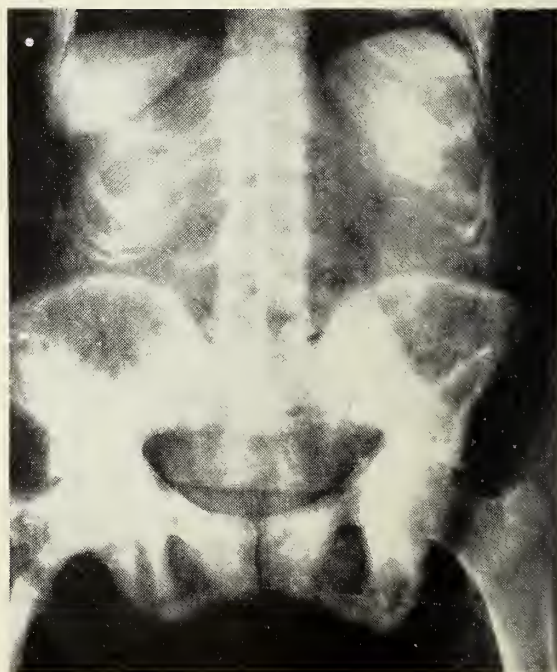


Figure 2. Multiple myeloma, showing "punched-out" areas of rarefaction in pelvis and spine.



singularly resistant to malignant disease, a good point to remember in differential diagnosis. Incidentally, there are few disorders more horribly painful than is nerve root involvement in some pathological vertebral fractures.

A noteworthy feature of spinal metastases is very often an extradural plaque or even collar of tumor, surrounding the cord and/or roots, and thus producing symptoms both by direct pressure and by interference with blood supply. Often there is adjacent bony involvement. While this feature is common in carcinomas, it is also observed in lymphosarcoma.

At this point it may be of interest to call attention to the fact that certain tumors have strong tendencies to metastasize to bone. This likelihood, as judged by autopsy material, is: prostatic cancer (50 to 70 per cent), breast cancer (45 to 55 per cent), thyroid cancer (28 to 34 per cent) and hypernephroma (40 to 50 per cent) (Willis, p. 323). Unhappily, we have all had patients whose very first symptoms were due to a skeletal metastasis. In our hospital the greatest offender in this regard has been the primary lung cancer. Gastro-intestinal malignancies are not quite such common offenders, nor are those of the body of the uterus. Patients who survive two or more years after unsuccessful treatment of carcinoma of the cervix very often develop metastases or extension into the lumbosacral plexus and into the lower lumbar spine.

*Hodgkin's disease* often affects the spine quite early. At autopsy, Jackson and Parker found bones involved, either by tiny tubercle-like foci, by large destructive lesions, or by intermediate forms in 15 to 30 per cent of all cases. The spine is by all odds

the commonest site involved. Of great diagnostic importance is the fact that symptoms referable purely to bony involvement often antedated all others by two to 14 months. Thus backache is not infrequently the earliest and most outstanding symptom. Bone changes as noted in the roentgenogram vary greatly. There may be: first, no demonstrable change, but the presence of metastases may be confirmed at autopsy; second, they may be multiple and osteolytic, with some occasional new bone formation at the margins of the invading tumor; third, the bone trabeculae surrounding small nests of metastatic cells may hypertrophy, resulting in very marked new bone formation, thus giving rise to a picture of markedly increased bone density. Root pains are very common, and if the lesion occurs in the lower lumbar spine and is unaccompanied by x-ray changes, a mistaken diagnosis of tumor or ruptured disk is all too easily made. The authors fell into this very error just recently!

Another fatal disorder which may begin with backache is *multiple myeloma*. Here changes as noted in the roentgenogram are usually demonstrable quite early, at least as related to the onset of pain. While Bence-Jones protein is always sought for in suspicious cases, it is well to remember that its presence is neither constant nor pathognomonic, and usually is found later in the disease. The globulin of the blood proteins is often relatively high.

*Paget's disease* may be associated with backache. Roentgenographic changes in the pelvis are often demonstrable even before those in the spine or

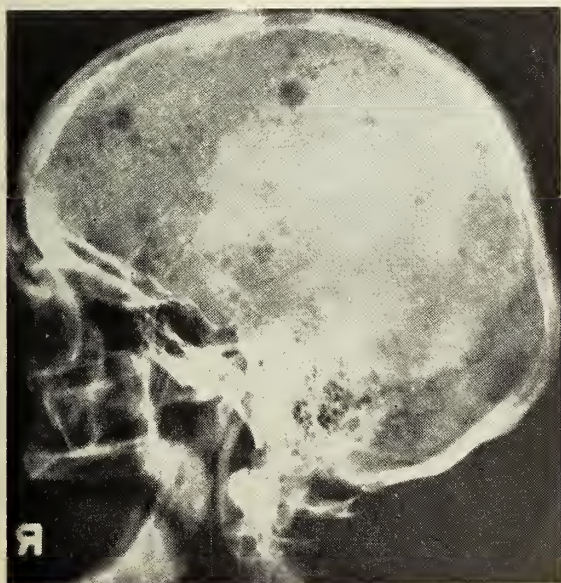


Figure 3. Multiple myeloma, showing "punched-out" areas of rarefaction in skull.



Figure 4. X-ray of dorsal spine showing osteogenic sarcoma secondary to Paget's disease.



skull. Malignant degeneration is by no means uncommon in this disease, the authors having had three cases of sarcoma of the spine arising during its course (Figure 4).

#### Benign Tumors of the Spine

While the majority of neoplasms of the vertebrae are malignant, one not infrequently encounters benign growths. Since the outlook is so utterly different in the two groups, one should seek proof beyond reasonable doubt before relegating any solitary lesion to the scrap heap of "hopeless cancer." By so doing one will salvage the occasional patient whose roentgenographic diagnosis of malignancy had seemed obvious. The following case is in point.

A 41-year-old man entered the Albany Hospital, September 1, 1939, because of excruciating pain in the back with radiation into the left groin. Coughing, bending, and lifting increased the pain. Abnormal physical findings were limited to marked spasm of the sacrospinalis muscles, thorocolumbar scoliosis with convexity to the left, and a narrow band of hyperaesthesia corresponding to the left 11th dorsal nerve. X-ray films disclosed a destructive lesion involving the body of the 11th dorsal vertebrae and the adjacent portion of the left 11th rib (Figure 5). Operation, performed solely in hope of relieving pain by decompression and rhizotomy, revealed what was believed to be an "inoperable malignancy." Following operation he was given three courses of irradiation with a total of 5100 R. units. Much to



Figure 5. X-ray following treatment showing recalcification of body of 11th dorsal vertebra and 11th rib.

our mutual surprise and satisfaction he has remained well these past 11 years and is now working regularly. Pathological diagnoses have ranged from hypernephroma to giant cell sarcoma, with the majority, however, favoring some form of hemangioma.

The moral, however, is that in the instance of solitary lesions one should not give up until metastasis is definitely established.

*Giant cell tumors* cause both bone destruction and new bone formation; they usually involve the body which, as in the long bones, they tend to expand. Biopsy is usually required for confirmatory diagnosis. They are seldom so situated as to be conveniently curetted with any degree of thoroughness. If the spinal canal is compromised some decompression is necessary. Fortunately their response to irradiation is usually satisfactory.

In recent years the *osteoid osteoma*, another remarkably interesting benign lesion, has come to be recognized. The very considerable pain associated with them is relieved at once by their removal. In the x-ray the relatively small, localized, area of bone density surrounding a much smaller area of rarefaction suggests the diagnosis. Scoliosis, point tenderness and muscle spasm, in the absence of signs of infection, afford further suggestive evidence.

*Hemangiomas* of the vertebrae are not uncommon, particularly in the lower lumbar region. Some are undoubtedly asymptomatic, others result in mild backache, while a few produce severe back and root pains. The roentgenogram characteristically discloses striated lines of bone density with little or no intervening rarefaction. Decompression of the spinal canal may become necessary if neurologic symptoms appear; spinal fusion is then in order, not only for splinting, but for support.

#### Differential Diagnosis

Bone destruction is not the private monopoly of cancer. Benign tumors such as neurofibromas may produce erosion while meningiomas, particularly in the cranium, can invade adjacent bone with resulting bone formation, bone erosion, and enormously increased vascularity.

Bone infections of various types are not infrequently confused with malignancy. Of these, *tuberculosis*, which although usually recognizable, has, in our experience, been outstanding. It is widely believed that Pott's disease is a disorder of childhood, and while that in general is true, and while the almost universal pasteurization of milk has greatly reduced the incidence, we see several patients each year whose tuberculous spondylitis has been mistaken for malignant disease. This is particularly confusing when the familiar disk destruction is not advanced, when weakness and numbness of the



lower extremities are present and when paravertebral abscess is not apparent. While this is a most undesirable affliction it is nonetheless a far happier diagnosis to have to render than is cancer!

*Staphylococcal and typhoid osteomyelitis*, both well known entities to the physician of previous generations, are rarities today.

*The ruptured intervertebral disk* should not be confused with malignant disease, but may readily be confused with tumor of the spinal cord, or more frequently, of the cauda equina. Trauma by no means always ushers in the symptoms of backache and root pain; in certain cases the herniation may be so large as to compress the cord or cauda equina, resulting in paraplegia and sphincter disturbances. Most massive ruptures occur in the lower lumbar region, where a narrowed disk in the x-ray may suggest the diagnosis. If there be any doubt whatsoever concerning the nature or location of such a lesion, myelography is indicated.

*Marie-Strumpfel's arthritis* may result in low back pain and muscle spasm long before roentgenographic changes are readily apparent. Pains not infrequently radiate down into the hips and mistaken diagnoses of tumor or ruptured disk are all too often entertained. It is well to remember that obliterative changes about the lumbosacral joints are usually discernible well before the more striking

calcifications in the interspinous ligaments.

Other lesions not uncommonly resulting in back pain are: osteoarthritis (associated with generalized disk degeneration), osteoporosis (which may be accompanied by compression fracture), and such malignancies as retroperitoneal sarcoma, lymphosarcoma and leukemia.

Thus the differential diagnosis of backache is often an exercise which will test the mettle of the keenest of clinicians.

#### Summary

Tumors of the spine and spinal cord are not uncommon; their diagnosis is often delayed by the commonness and customary benignancy of their most frequent presenting symptom, namely backache. While posture, sprains, and occupation, together with some form of arthritis, doubtless account for the majority of such pains, it is of great importance to recall that back pain is the cardinal symptom in most intrinsic disorders of the spine; it is equally important to remember that it may be an early complaint in certain chest and abdominal diseases.

To paraphrase a teaching of the late Dr. Tom Brown:\* The back is a mirror in which may be reflected the pain of a great variety of disorders.

\*"The stomach is a mirror in which may be reflected the symptoms of disease of almost every organ of the body."

## The General Pathology of Endocrine Tumors

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This is a summary consideration of tumors of endocrine glands, not so much from the point of view of individual tumors but of the properties of the tumors which are more or less common to all.

The usual approach to the study of tumors is by way of embryology. Most of the endocrine tumors have the cellular pattern of epithelial neoplasms but that does not mean they are necessarily derived from ectodermal or endodermal structures. The cells of the pituitary, the thyroid, pancreas and adrenal medulla are of epithelial origin, but as to other glands there is some question as to ultimate derivation and the situation may be complicated by points of origin near that of other structures. Embryonal displacements or inclusions may thus cause confusion in determining exact origin.

One example is the granulosa-cell tumor of the ovary, a tumor which may induce precocity, disturb menstruation or cause pseudo-rejuvenation after the menopause. It is unlikely that it is derived from

mature granulosa; there is question as to what cells of the primitive ovary can give rise to it. Another is the so-called interstitial cell tumor of the testis, an occasional cause of precocity in boys. Adrenal cortical rests occur near the testis and adrenal cortical tumors bring about virilization of females and precocity in boys. Thus, adrenal cortical cells and interstitial cells can produce similar manifestations. To name the tumors as interstitial cell tumors is not yet definitely supported by assays of steroids in the urine. And it may be that some are interstitial cell and other adrenal cortical cell tumors. The controversies as to these and several other endocrine tumors cannot be decided by microscopic features alone.

It is generally agreed that two principal factors are concerned in the origin of tumors, namely, intrinsic and extrinsic or realization factors. In man and other animals there must be an intrinsic factor which predisposes cells to neoplasia, and in some in-

stances this can be identified as hereditary or constitutional, but this factor has not been demonstrated with human endocrine tumors. However, largely because of experimental work and partly because of observations on man, it is certain that the realization factor can be due to absence of, excess of, or imbalance of hormones. In mice, irradiation had led to production of ovarian tumors, but there is no conclusive evidence of similar action in man.

The supporting tissues, blood vessels, fat, etc. of endocrine glands may give origin to tumors of these organs, but our study is directed toward those tumors derived from the special constituent cells. The benign tumors are generally referred to as adenomas, but in only a few types, for example thyroid tumors, are there acinic structures. As indicated above, this terminology is not fully justified on embryological grounds, but the cells in most of the tumors look like epithelium. Curiously, many of the malignant tumors are named carcinomas rather than adenocarcinomas. However, one tumor of epithelial origin in the adrenal medulla is called pheochromocytoma, and certain ovarian tumors are given names because of the appearance of the cells, such as granulosa-cell tumor, thecoma and hypernephroid tumor.

Endocrine tumors may be invasive and metastasize, but the diagnosis of malignant character is often difficult. For most tumors the pathologist diagnoses a tumor as malignant by such features as alterations of pattern and polarity, pleomorphism of cells and abnormalities of mitosis, but these features may not be diagnostic with endocrine tumors for clearly benign tumors may display them. In certain thyroid tumors invasion of blood vessels is the criterion, and in cases of parathyroid tumors invasion of lymphatics is the diagnostic feature. In most others, such as adrenal tumors, invasion into and through the capsule is the principal sign. Metastasis varies greatly. Tumors of the pituitary rarely, if ever, metastasize. Thyroid carcinomas, neuroblastomas of the adrenal and chorio-carcinoma of the testis metastasize widely. The malignant granulosa-cell tumor of the ovary metastasizes infrequently and usually only locally.

Recurrence after removal may be easily identified, as for example in the thyroid. Yet what appears to be recurrence after removal of an adrenal cortical tumor may really be a new tumor derived from aberrant foci of adrenal cortex. Recurrence of granulosa-cell tumors is reported to be as high as 38 per cent, but there is serious question as to whether the second tumor is a new one derived from primitive cells in the immediate neighborhood.

Malignant tumors are said to be occult if the first manifestation is a metastatic lesion, but this is rarely true of endocrine tumors except for that group of adrenal tumors included in the category of neuroblastoma when metastasis to head or liver or bone is observed before there is any indication whatever of the original tumor. The so-called lateral aberrant thyroid adenoma is often the first sign of a thyroid carcinoma. Testicular tumors, especially the choriocarcinoma, may metastasize without clinical evidence of the primary tumor. An exceedingly rare case in my experience was that of a granulosa-cell tumor of the ovary which was first indicated by a pulmonary metastasis.

Many tumors of endocrines are smooth and generally spherical because their situation is such that the form is not altered by the confinement of surrounding structures. However, their form may correspond somewhat to that of the gland if they are entirely within it. Nodularity is not often evident, except in certain thyroid and ovarian tumors, among the latter being the testicular tubular adenoma and an occasional granulosa-cell tumor. Tumors of endocrines are often widely vascularized as is true of the original gland, but this is not regularly correlated with metastasis. It can account for hemorrhage and necrosis.

Certain tinctorial properties of the neoplastic cells are associated with function, as for example the acidophilic adenoma of the pituitary with acromegaly and the basophilic adenoma with Cushing's disease. Peculiar is the fact that there are but few beta cells in functioning islet cell tumors of the pancreas. The assumption is that the cells are primitive and have not yet acquired cytoplasmic granules, but are capable of producing insulin. Many attempts have been made to identify the cells in adrenal cortical tumors which determine whether it is virilizing or feminizing but, in my opinion, the results are not conclusive. Not strictly tinctorial is the Croke change in functioning basophilic tumors of the pituitary in which the nuclei are hyalinized.

Undoubtedly, the exhibition of function by endocrine tumors is the result of production of hormones. The hormonal effects may be identified by their clinical and physiologic features and in some instances the hormones can be assayed in the urine, the blood and the tumor. The functioning islet cell tumor of the pancreas produces hypoglycemia by means of an excess of insulin. The pheochromocytoma of the adrenal leads to spasmodic or continuous hypertension by its elaboration of epinephrine rich in norepinephrine (arterenol). This is established by assay of the tumors and is attested by



the effects of adrenolytic substances such as the benzodioxanes.

The assay of steroids in the urine is of importance in understanding the action of tumors, but cognizance must be taken of the facts (a) that the steroids in the urine may be degradation products of original steroids and (b) that the state of the receptors may be significant. A presumptive example of the latter is the statement that acidophilic adenoma of the pituitary leads to gigantism if it originates in early life and to acromegaly if originating later. The same assumption is offered as an explanation of unilateral gynecomastia, i.e., that in the one breast receptors are susceptible to the action of circulating estrogens.

Virilization is a clinical phenomenon which may be brought about by different endocrine tumors. It may be manifest as secondary sexual precocity in boys and secondary sexual inversion in females. The precocity in boys may be associated with adrenal cortical tumors or that tumor of the testis usually called interstitial cell. Stature, bone age, mental age, hirsutism, genitalia, voice, etc., are of proportions well in advance of the chronological age. When female children are virilized, adrenal cortical tumors are likely to be responsible. The adrenogenital syndrome of young girls includes broad shoulders, narrow hips, hirsutism of male type and large clitoris. Girls may go on to normal menarche and later become virilized, usually because of a similar tumor. However, in later life virilization may be due to adrenal cortical tumors or to tumors of the ovary, e. g., the arrhenoblastoma, or after the menopause the hypernephroid tumor of the ovary.

The term feminization may mean sexual precocity in girls, so-called rejuvenation in post-menstrual life and certain somatic changes in males. Little girls may be tall, but more impressive is development of breasts, broad hips, large mons veneris and clitoris, female escutcheon and scanty irregularly periodic uterine bleeding, almost certainly anovulatory. The chief neoplasm is granulosa-cell tumor of the ovary, but it may be cortical adrenal tumor, a pituitary tumor, or certain non-tumorous lesions of the hypothalamic region. Most important is the fact that precocity occurs much more often without than with tumor.

Several years after the menopause, a woman may have periodic or continuous uterine bleeding. Since the ovary is atrophic, the bleeding is anovulatory and there are no other manifestations of return of sexual life. Thus, this is not a true rejuvenation. Excluding other causes of bleeding, the lesion is usually a granulosa-cell tumor of the ovary.

Exceedingly rare and in our experience observed in only one case is the woman who matured physi-

cally without either primary or secondary sexual development. Her breasts enlarged at age 30 and she developed periodic uterine bleeding, the result of a choriocarcinoma presumably in an undeveloped ovary. Thus, the tumor in this female was feminizing.

The principal changes observed in so-called feminization in males are bilateral gynecomastia, atrophy of testes and reduction or absence of libido. This is a decrease in maleness rather than feminization. It has been reported in several cases of adrenal cortical tumor in young men and is well-known in connection with choriocarcinoma of the testis, extragenital choriocarcinoma and rarely with other tumors of the testis. When assays are made there are increases in output of estrogens and chorionic gonadotropins. However, these same phenomena are probably more frequent in association with hepatic cirrhosis than with endocrine tumors.

Increased basal metabolic rate is well known in association with certain adenomas and carcinomas of the thyroid, evidently because of excessive production of thyroid hormone. Sugar metabolism is altered in some cases of adenoma and carcinoma of the pancreatic islets, a manifestation of hyperinsulinism. Diabetes accompanies adenoma of the pituitary and cortical tumors of the adrenal and occurs in Cushing's disease. However, the glycosuria observed in the hypertensive crisis of pheochromocytoma is not a true diabetes.

Hyperthyroid states are often accompanied by loss of fat, but this is probably because of increased metabolic rate rather than the direct effects of thyroid hormone. Obesity may be observed in some cases of adrenal cortical and ovarian tumors, but the part played by hormones is uncertain. The "moon face" of Cushing's disease is probably more the effect of edema than of accumulation of fat. The removal of virilizing tumors from young women results in a redistribution of fat so that hips become wide and breasts take on normal fat content; just how hormones act is probably complex and certainly not clear.

Increased output of nitrogenous products in the urine indicates destruction of proteins in hyperthyroid states, but again hormones cannot be held to be entirely responsible. In those disorders of endocrines in which there is diabetes, protein can be utilized in the production of glucose, the phenomenon of gluconeogenesis. This has been used to explain loss of resiliency of the skin, abdominal striae and marble skin of Cushing's disease, as well as muscular weakness and osteoporosis in various states.

Changes of electrolyte metabolism are best illustrated by lesions of the parathyroids, including ade-

noma and carcinoma. Clinical and experimental evidence supports the view that the alterations of calcium and phosphorus metabolism are due to excess of parathormone. Only with great rarity do primary tumors destroy the adrenals so as to lead to the changes in salt metabolism of Addison's disease. The changes of chloride and potassium metabolism in Cushing's disease are not constant.

Growth is promoted by pituitary tumors, especially the acidophilic adenoma. We have observed two instances of cortical adrenal tumor in one of apparently homologous twins, the one with the tumor considerably taller than the one without. Increased rate of growth of children in connection with adrenal cortical tumors and granulosa-cell tumor of the ovary is frequent. Perhaps this is brought about by action of their hormones on the growth hormone

of the pituitary, yet there is such an interplay of hormonal effects and of genetic factors that no simple explanation suffices.

It is to be emphasized that with the exception of thyroid tumors the neoplasms of endocrine glands are infrequent and in some instances rare. Similar clinical manifestations may occur in other disorders and differential diagnosis must be based on meticulously careful examination. The further study of the functioning tumors of endocrines will be favored if each physician who encounters one will make or have made careful and consecutive endocrine assays. The subject is presented in greater detail in the author's paper: General Pathology of Tumors of Endocrine Glands, Bulletin of the New York Academy of Medicine, Volume 22, pages 503-519, 1946.

## Treatment of Cancers of the Anus and Rectum

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*Anal Epitheliomas.* The management of cancers of the anus is distinctly a different problem than the treatment of carcinomas of the rectum. The majority of anal cancers are squamous cell epidermoid carcinomas. They differ in their origin, their histologic structure, their behavior and in the requisites for curative therapy. I know of no other malignant tumor in which such great disparity exists in the methods of treatment, depending on the stage of the disease, as is true for epitheliomas of the anus. This tumor should be recognized very early by the patient, because of the extremely sensitive part of the anatomy in which it develops. It is incomprehensible that in some patients it is permitted to progress to an advanced stage before proper treatment is instituted.

*Radiation Therapy of Anal Cancers.* If these anal epitheliomas are found early, are of the papillary type, and not deeply invasive, radiation therapy is a very effective method of treatment. One can apply radiation to the anal canal either by means of radium plaques, or by fractionated doses of low voltage, short distance, or contact x-ray therapy, with light filtration and bevelled tip cone placements. It is not the most pleasant experience in the world to have x-rays or radium applied to such a sensitive region as the anus; and yet the individual cherishes a functional anus, as well he should, and agrees to tolerate the temporary unpleasantness in order to conserve this relatively important organ.

The epithelium of the anal canal does not tolerate

irradiation well. The skin may become blistered during irradiation with superficial infection, the formation of fissures and associated spasm of the rectal sphincter, all contributing to a most distressing experience for the patient. I have found that if the epithelioma does not actually invade deeply within the anus, it is proper manually to overdilate the anal canal in order to stretch, and even tear, the sphincter in order to prevent the unpleasant tenesmus. After the irradiation has been completed and the reaction is slow in healing, as often occurs, I have again dilated the anus quite vigorously under sodium pentothal anesthesia and by so doing have been able to induce or permit healing to occur rapidly in this irradiated tissue.

Some surgeons have advocated the routine radical resection of the anus and rectum for these epitheliomas, which of course is my practice in those cases which are not deemed suitable for radiation therapy. As an example of the exercise of judgment under these circumstances the following case report is cited:

A 23-year-old pregnant woman was treated for anal epithelioma in a large institution by a man who now occupies the chair of surgery in that university. A biopsy was reported as epidermoid carcinoma. A therapeutic abortion was done and she was then told that an abdomino-perineal rectal resection was necessary. Dr. James Ewing examined the biopsy at the time the patient consulted him, and was of the opinion that radiation therapy



might be tried. The patient was referred to me and received a very intensive dose of irradiation. The severe radiation reaction took over two months to heal, and was aided by repeated dilations of the rectum. This woman is living and well more than 10 years since her treatment. She has an intact rectum; she has normal bowel movements. She has had two children since that time and has no complaints whatsoever.

I have had other patients with sweat gland carcinomas of the anus which have responded to properly planned irradiation provided the cancers were not too deeply infiltrating.

*Surgical Treatment of Anal Epitheliomas.* If an epithelioma of the anus does infiltrate deeply, if it is encroaching upon the sphincter as sometimes happens, if it has metastasized which it may do in one or two directions, then radical surgical treatment is indicated. The surgical treatment of epidermoid carcinomas of the anus is even more radical than obtains for the average carcinoma of the rectum. This is because the anal canal is abundantly supplied with lymphatics which drain into the medial superficial inguinal nodes, so that often one finds metastases in inguinal nodes from anal cancers.

Carcinoma of the rectum does not metastasize to the groin ordinarily until it first extends downward to involve the anal canal. Infiltrating carcinomas of the anal canal therefore require groin dissections as well as removal of the anal canal. The scope of such an operation encompasses an abdomino-perineal rectal resection with a pelvic dissection of the iliac and obturator lymph nodes, and at the same operative seance and in continuity with the anorectal specimen the major portion of the vulva, if a female, is removed, plus a bilateral groin dissection. The inguinal and femoral nodes are removed in continuity with the specimen including the intervening lymphatics in the skin and subcutaneous tissues.

If the patient is a male, the same operative technique applies, namely an abdomino-perineal rectal resection with intrapelvic obturator and iliac node dissections, external bilateral groin dissections with a liberal sacrifice of perianal and scrotal skin in continuity. The skin between the anus and groin should be widely excised. All metastasizing cancer cells do not pass unerringly through these lymphatics to the lymph nodes to be filtered out without any of them stopping en route. Whenever separate operations have been attempted, i.e., separate groin dissections, independent of the anorectal resection, recurrence is almost always the rule.

*Radiation Therapy of Rectal Cancers.* The ownership of a high voltage x-ray machine, the possession of 100 milligrams of radium, or the acquisition of sufficient surgical skill to perform a certain operation do not constitute the indications for preferential selection of one method of treatment for cancer anywhere. This point of view definitely obtains for cancer of the rectum as it is my contention that the therapist should select the method of treatment which in that particular individual seems to be indicated, gives promise of the best results, and is the safest procedure to apply.

Is there ever an indication for the use of x-rays and radium in the treatment of cancer of the rectum? I believe there is. I perform radical abdomino-perineal rectal resections in aged subjects, if they are good operative risks. But if the aged person is a very poor operative risk, if our cardiologists say that this patient will very likely not tolerate the radical operation, then we must suit the treatment to the individual in each case. X-ray and radium treatment of small early cancers of the rectum in aged or infirm patients is highly successful if accurately given, if careful case selection is employed, and if metastases to lymph nodes have fortunately not occurred.

I have used irradiation justifiably as a palliative measure for inoperable rectal cancer hoping to convert it to one that can be technically removed. In defense of this last thesis, we have a large series of cases

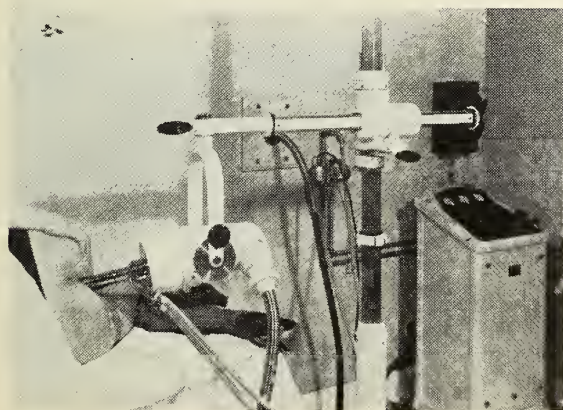


Figure 1. Contact low voltage x-ray therapy of epithelioma of anus using Chaoul apparatus.

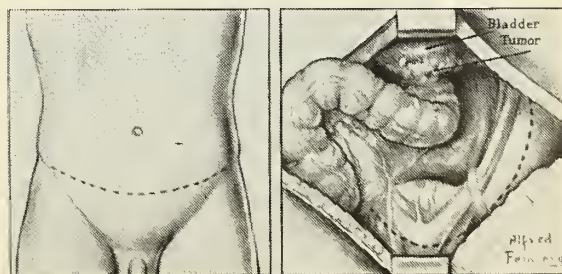


Figure 2. Radical pelvic evisceration. (a) Curvilinear incision. (b) Exposure afforded for pelvic dissection. Dotted line indicates scope of excision of pelvic peritoneum.

in which inoperable rectal cancers have been converted to technically resectable lesions through the intermediation of preliminary irradiation. Dr. Theodore Miller and I presented this subject before the International Congress of Radiology in London. As an example of the practical value of these combined disciplines, I shall mention the case of a patient who came to us with a fixed cancer of the rectum, absolutely impossible to remove surgically; he was treated by irradiation, employing a combination of external supervoltage x-irradiation through a pelvic cycle, plus a perineal port with intermediate voltage, and supplemented by interstitial irradiation. Three months later, the tumor was movable, and an abdomino-perineal rectal resection was performed on this man. He is living and well now some 13 years later.

Another typical example to be cited is that of a young woman who had a laparotomy for an attempt at abdomino-perineal rectal resection by an able surgeon, who abandoned the operation because he found it technically impossible to perform because of its fixity. After a lapse of four months, the cancer obstructed the rectum, and then another surgeon constructed a colostomy; at this time he too made a futile effort to resect the cancer. We later treated the patient by conventional irradiation after the manner that I have described. Two months after completing the program of radiation therapy, it was possible for me to perform the classical abdomino-perineal rectal resection, from which she recovered without complications. We have come to realize that the apparent fixation of some rectal cancers is due not to infiltration by the cancer itself, but to co-existent infection, fibrosis and scarring, which can be greatly improved by irradiation.

The statement that we occasionally treat a primary cancer of the rectum by irradiation without surgery may evoke surprise. I must reiterate, how-

ever, that these instances are of course in very selected cases. These cancers are usually papillary, very small, freely movable, apparently confined to the mucosa, without clinical evidence of invasion, not encircling the bowel, not associated with stenosis, occurring usually in elderly subjects who are poor operative risks, and the entire clinical setting is such that after careful study, I have concluded that one can get as good a result by radiation therapy as by radical surgical dissection. In choosing this method as a substitute for radical surgical treatment, we realize that we do not have access to the lymph nodes draining the rectum, and that in some instances, mistakes might very well be made. In reviewing the considerable group of patients in whom this operation has been done, I must say that it has been eminently satisfactory.

*Choice of Modalities for Radiation Treatment.* One of three methods or a combination of them has proved useful. External irradiation, by treatment around the pelvis with x-ray therapy, the customary pelvic cycle, supplemented either by interstitial radon applications in the form of gold radon seeds in small tumors in the base of the tumor; in some instances preceded by endotherm removal, or in other instances, the insertion of special radium applicators into the rectum with proper filtration for that part of the rectum not to be irradiated, giving treatments daily, or every second day, over a time to the limit of tolerance have been the methods generally employed. We have many elderly people that have been so treated that are living and well for years after treatment of these early cancers of the rectum.

*Surgical Treatment of Rectal Cancer.* For the average patient we employ, of course, the classical abdomino-perineal rectal resection. As we look back over the history of this operation, and realize that perhaps two surgical generations have elapsed since

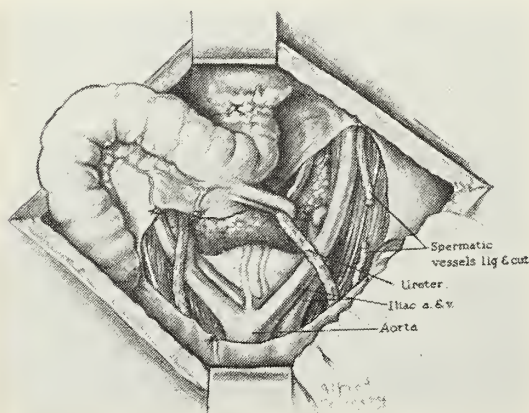


Figure 3. Radical pelvic evisceration. Dissection of peritoneum, fat, areolar tissue and iliac lymph nodes.

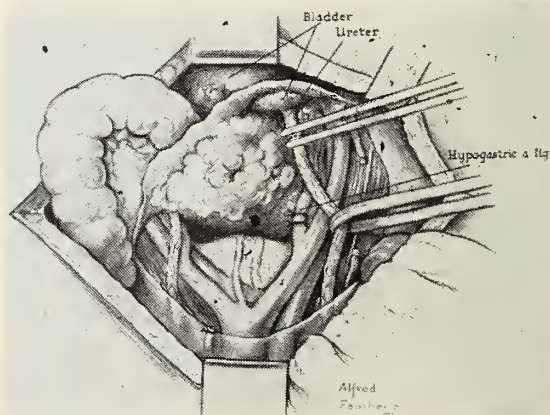


Figure 4. Radical pelvic evisceration. Ligation of hypogastric arteries. Mobilization of ureters.



Sir Ernest Miles described the technique, there has been very little improvement in its performance in these intervening years. One of the reasons why this operation has been so successful is the same reason why radical mastectomy has been approved and has been so consistently practiced throughout the world. The principle in concept is a removal of the entire organ in which the cancer develops, the regional lymph nodes into which one might expect the first relay of metastases to occur, and of equal importance, the intervening lymphatics between the primary cancer and the secondary deposits. The principle has not been applied for cancers in other portions of the body as often as it could be.

Before a cancer anywhere can be treated, it should be diagnosed. Dr. Slaughter has rightly said that cancers of the rectum are accessible, that the majority of them can be felt with the finger, can be seen through the proctoscope, and biopsies of course can be obtained. In this connection we must remember that an individual who has cancer of the rectum may also have cancer of the colon, or may have precancerous polyps higher in the colon. A patient with cancer of the rectum which is not stenotic, should always have a barium enema and roentgen study of the colon with contrast air insufflation. Such x-ray examination is not intended for primary cancer of the rectum which is more directly diagnosed but is indicated, because in our experience there are so many multiple cancers involving the colon and rectum, or polyposis associated with cancer of the rectum.

It is otherwise embarrassing at the time of the planned rectal resection to find co-existent tumors in the large bowel that require more radical surgical treatment. During the past four months, for example, I have performed four total colectomies for multiple cancers of the large bowel, in each instance a one-stage operative procedure being done. In one patient, with rectal involvement, a permanent ileostomy was required, but in the other three, with three, four and five separate cancers, respectively, ileoproctostomy could be achieved with preservation of the sphincter. The short stump of rectum remaining will be constantly available for close and frequent inspection.

Of course I am not prepared to recommend a total colectomy and rectal resection for every person with cancer of the rectum. As a compromise, we must examine the rest of the colon, and hold it suspect all the rest of that individual's life. It is not uncommon after an abdomino-perineal rectal resection to be compelled in future years or during the observational period to resect other cancers of the cecum, or transverse or descending colon. As our

backlog of survivals increase, so are we encountering necessities for doing more and more of these multiple operations. One reason, I believe, is that

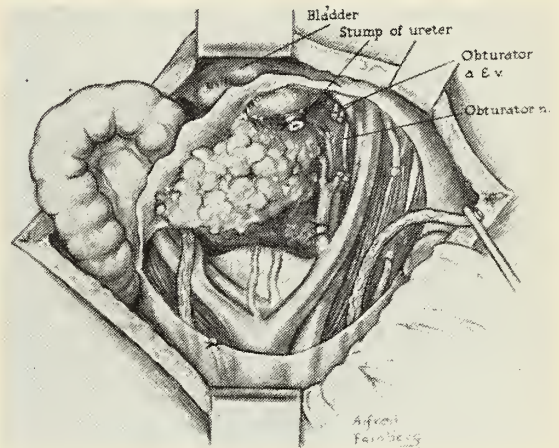


Figure 5. Radical pelvic evisceration. Right ureter transected. Beginning dissection of right obturator space.

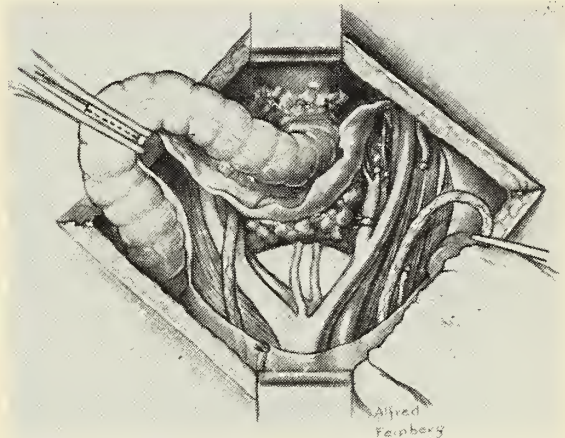


Figure 6. Radical pelvic evisceration. Transection of pelvic colon.

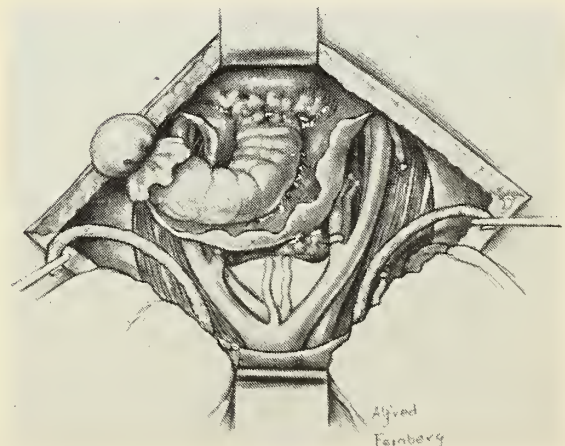


Figure 7. Radical pelvic evisceration. Left ureter transected. Segment of colon to be excised with rectum.

the precancerous polyp is much more frequent than generally appreciated.

We find only about one in 800 apparently normal people over 40 years of age who have asymptomatic and unsuspected cancer of the stomach on routine x-ray study. But seven per cent of people over 40 years of age, who have sigmoidoscopies done, have one or more polyps in the accessible bowel. Many of these polyps might degenerate in the future and become cancerous. Any individual, then, in whom such a polyp is found, is entitled to a barium enema and roentgen studies to see if polyposis exists elsewhere in the colon.

*Palliative Rectal Resection.* If a patient has metastases to the liver, only two or three foci, let us say, and without impaired liver function, or if there are nodes extending high along the aorta to convince the surgeon that he cannot cure the individual, and if the rectal cancer is movable, and lends itself to resection with facility, I will unhesitatingly do an abdomino-perineal rectal resection, believing that the best palliation is to resect the cancer. This point of view applies to cancers of the rectum, colon and stomach.

*Selection of Surgical Procedures for Rectal Cancer.* There are four different operations, from which one may choose the one most suitable for the patient, based on the extent and location of the cancer, viz.; (a) total colectomy and rectal resection for rectal cancers associated with colonic polyposis, (b) the classical abdomino-perineal resection of Miles, supplemented by pelvic lymph node dissection, (c) pelvic evisceration for rectal cancers involving contiguous organs, (d) conservative rectal resection with preservation of sphincteric control.

A. *Rectal Resection and Total Colectomy.* This major operative effort is usually completed in one

seance; the multiple staged procedures are never done unless the tumor causes obstruction or is associated with severe infection. The present day availability of blood for transfusions and improvements in anesthesia have enabled the surgeon to complete the operation in a single stage, which represents a great saving in finances and morale.

B. *The Classical Abdomino-Perineal Rectal Resection.* The classical abdomino-perineal rectal resection has maintained its deserved reputation for the past two surgical generations. As originally conceived and executed it was a two dimensional dissection, being quite adequate as far as its upward extent was concerned, and quite adequate below because it included the anus, but it wasn't sufficiently radical in removing the lateral spread of the cancer. Gilchrist and his group in Chicago, by clearing surgical resected specimens, have contributed to our knowledge of the lymphatic spread of rectal cancer and have impressed us with the necessity for an associated dissection of the lateral groups of pelvic lymph nodes. The three-dimensional rectal resection now removes not only the rectum from the hollow of the sacrum, and of course from the base of the bladder, or from the cervix and the vagina, but the lateral dissection includes the lymph nodes in the iliac and obturator groups.

Binkley and Deddish at the Memorial Cancer Center have found that 20 per cent of patients undergoing this operation have metastatic cancer involving these lymph nodes in which the metastases were not clinically detectable at the time of the operation. From their statistics, one might infer that the routine application of pelvic lymph node dissection would offer an opportunity for cure to 20 per cent more people than if the lateral dissection of iliac and obturator nodes had not been done. The upper extent of the operation has also been

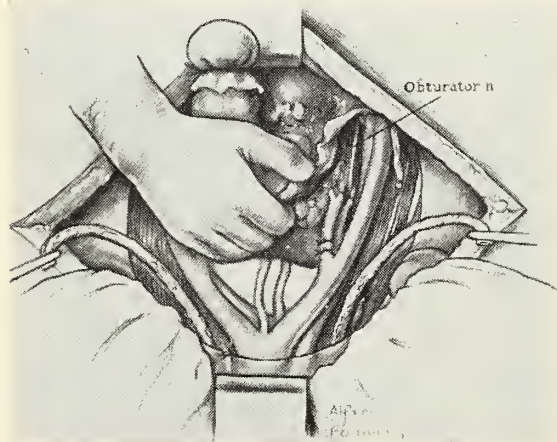


Figure 8. Radical pelvic evisceration. The rectum is dissected free from the hollow of the sacrum.

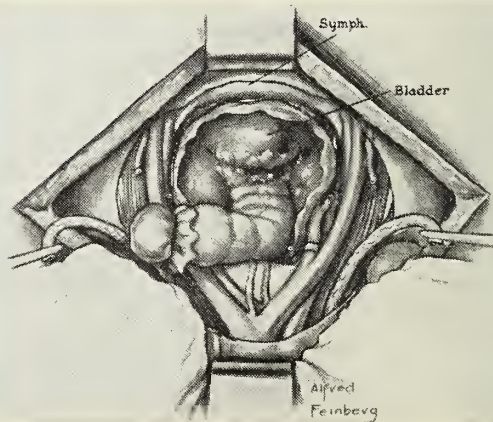


Figure 9. Radical pelvic evisceration. Anterior dissection started in prevesical space.



increased to include the mesentery and lymph nodes as high as the origin of the superior hemorrhoidal vessels.

*C. Removal of Organs Contiguous to the Rectum: Pelvic Evisceration.* Cancers that were formerly considered inoperable because of invasion of neighboring organs, e.g., primary rectal cancers that were adherent to, or invading the urinary bladder, uterus, and vagina, possibly associated with the formation of multiple fistulas, are now being resected. It has been found that a considerable number of people who die of cancer of the rectum still have the disease confined within the pelvis. The surgeon no longer hesitates to remove these adjacent organs together with the rectum, such as a part or all of the urinary bladder, the uterus and ovaries, and the vagina. In many women, the uterus, ovaries, tubes and the posterior vaginal wall are removed with these rectal cancers, particularly if there is any anterior extension. More and more surgeons consider it wise to remove the ovaries in all women at the time of operation for cancer of the rectum even though they are not clinically involved; the ovaries have been involved later in a disappointing group of cases.

The extreme limit is the radical operation of pelvic evisceration, in which all the structures of the pelvis are removed. This operation in many cases is admittedly only a palliative procedure. The surgical procedure differs in the sexes only because of the different organs implicated. In the male, the urinary bladder and prostate are removed with the rectum, together with a dissection of all the pelvic lymph nodes. In the female, it involves removal of the rectum, the vagina, the vulva, the internal genitals, the urinary bladder and the urethra.

In pelvic evisceration, one must dispose of the ureters, the terminations of which are removed with

the specimen. There is considerable difference of opinion as to the manner of this disposition. Whenever the urinary bladder is removed for pelvic cancers other than rectal in type and the rectum can be preserved, then I routinely practice bilateral ureteral implantations within the colon because the rectum and colon serve as an excellent reservoir for urine. But if a permanent abdominal colostomy is to be done, the decision rests as to whether the ureters should be implanted in the colon, giving the patient a "wet" colostomy, or to implant the ureters in the skin as permanent ureteral neostomies. I prefer the cutaneous ureterostomies for those patients in whom the rectum is removed with the pelvic structures. Patients with "wet" colostomies, i.e., colostomies associated with uretero-colonic anastomoses, in my experience have suffered from an increased morbidity over the ureteral-cutaneous transplants; there is, moreover, a higher surgical mortality; many of these patients furthermore have serious functional renal disturbances later, and some of them die as a result of it.

If the rectum has to be removed in these patients in whom pelvic evisceration is done, I prefer to give them a midline colostomy, which is permanently dry, and which they irrigate every second day, preferably at night. Such colostomies have no constant discharge of feces, no embarrassing bad odor, no retention bag for feces and they are easy to manage. The ureteral skin transplants are readily and safely constructed. With proper catheterization into the renal pelves, these can be kept absolutely dry, and with small urinals on each side these people do not have a bad odor and they live quite satisfactorily.

I have heard physicians say, "I wouldn't be a party to any surgical procedures that would give the patient three abnormal openings, a colostomy and two ureterostomies." I believe that no doctor should

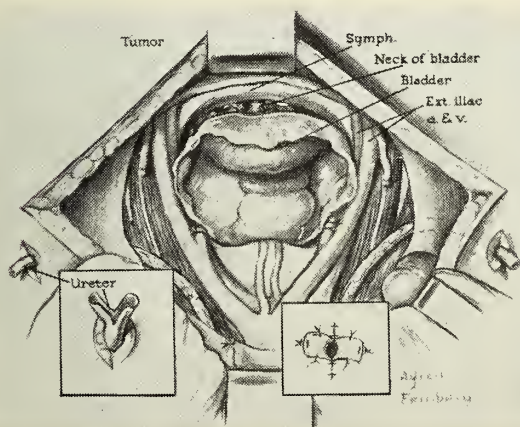


Figure 10. Radical pelvic evisceration. All pelvic viscera dissected free from above. Construction of ureterocutaneous neostomies.

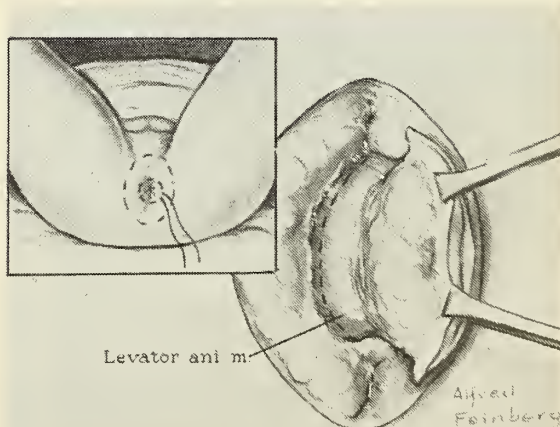


Figure 11. Radical pelvic evisceration. Purse string closure of anus. Onset of perineal dissection.

make these decisions for the patient. If the patient wishes an attempt made to save his life, if he is willing to undergo the inconveniences of the end result of this operation, then it is his decision, not ours, to make. We have no right to suffer our patient's illnesses or disabilities. We may sympathize

with them, we might know what we would do in the same circumstance, but we cannot deny them surgical treatment. I believe in this principle of cancer management, namely to give the patient the benefit of the doubt and do everything we can to treat the cancer. After all, their desire to live may be greater than ours under the same circumstances. We shouldn't play God and make this decision for them.

*Conservative Rectal Resection with Preservation of Sphincteric Control.* It is a strange paradox that one who practices pelvic evisceration and believes in it should at the same time advocate the conservative treatment of rectal cancer in selective cases. I am of the opinion that a definite place exists for preservation of the rectal sphincter if one exercises good surgical judgment. The indications assume that the surgeon is familiar with the natural history of the disease and is rigidly selective of the patients deemed suitable for these conservative procedures. In other words, plot the operation for a particular patient. I have done many conservative rectal resections with preservation of the rectal sphincter, and I will continue to do them. If these patients subsequently develop recurrences in the operative field, or in the pelvis, this is proof that bad judgment has been exercised in selecting such cases for this operation. If, on the other hand, they exhibit distant metastases in the liver, that is part of the natural history of the disease; it is an act of God over which we have no control.

Unfortunately, some surgeons who have persistently advocated preservation of the rectal sphincter have attempted to increase the indications for this operation to such an extent that they take out more and more advanced cancers, until ultimately they find their recurrence rate to be so high that they abandon the operation altogether. There is a happy

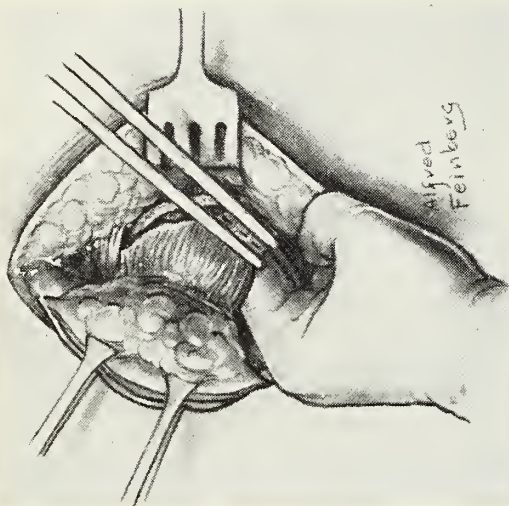


Figure 12. Radical pelvic evisceration. Levator muscles incised to release perineal outlet.

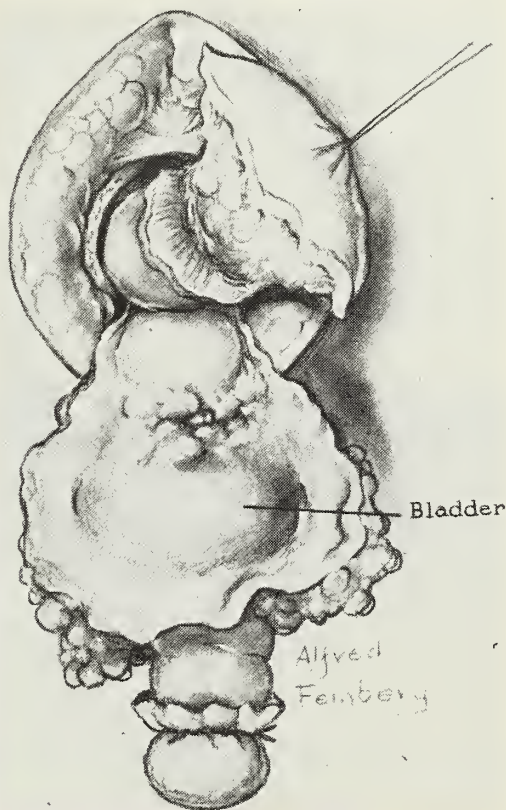


Figure 13. Radical pelvic evisceration. Perineal dissection completed.

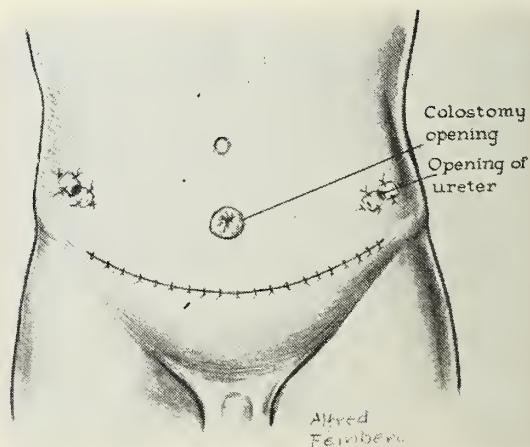


Figure 14. Radical pelvic evisceration. Closed abdominal incision. Location of colostomy and bilateral ureterostomies.



medium. One must avoid trying to fit the patient to an operation of your choice; instead, choose the operation for the situation and extent of the cancer in that particular patient.

Given a patient with rectal cancer, if it is a polypoid type, if it is freely movable, if it is sessile, if it doesn't encircle the bowel, if it is grade II or grade I in anaplasia, if it is papillary in structure, if it is situated well up above the anal sphincter, then one may employ one of several measures by which the tumor can be removed and the rectal sphincter saved.

What are the technical methods by which it can be done? If the cancer is at the level of the recto-sigmoid or slightly above it, above the level of the peritoneal reflexion, and if it is a very early cancer, one can do a superior segmental resection with primary anastomosis through an abdominal approach. In this operation the surgeon performs a dissection of the pelvic lymph nodes, resects the mesentery, removes a liberal segment of the pelvic colon, mobilizes the descending colon, and anastomoses it low from above.

The ease of performance of this operation can be enhanced by the Cherney incision. A transverse incision is made from anterior superior iliac spine to the opposite iliac spine, the recti muscles are severed just above the pubis and the patient is hyper-extended on the table so that they are jack-knifed with the fulcrum so to speak over the sacrum. This position increases the antero-posterior axis of the pelvis as it does in the Walcher position in obstetrics. It affords a remarkable exposure of the pelvic structure, so that the recto-sigmoid is so readily

accessible that one can construct a low anastomosis, just above the anus. In the end to end anastomosis, interrupted silk sutures are used to comprise two layers throughout for mucosa as well as for the muscular layers. In the female we often drain the site of the anastomosis by a colpotomy stab wound in the vagina. I cannot recall a single instance of a recto-vaginal fistula requiring surgical closure. In the male, the drainage is constructed posteriorly through the perineum. The peritoneal floor is repaired well up above the level of the anastomoses.

Another procedure sometimes employed is a modification of the old "pull-through" operation of Hochenegg. I have used the modifications of this operation that have been described by Doctors Bab-

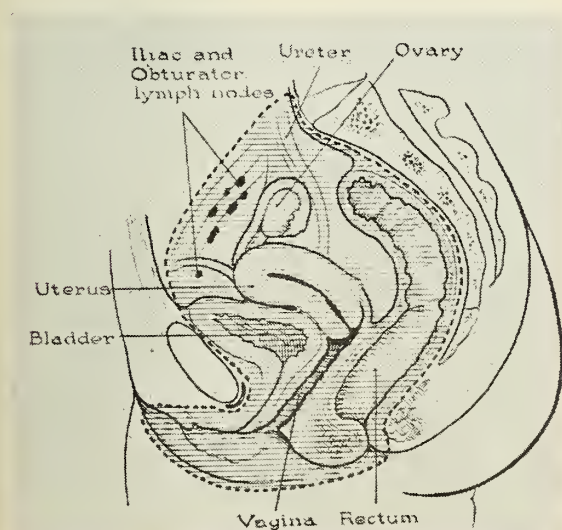


Figure 15. Radical pelvic evisceration. Diagram with shaded region to indicate the extent of dissection and viscera removed.

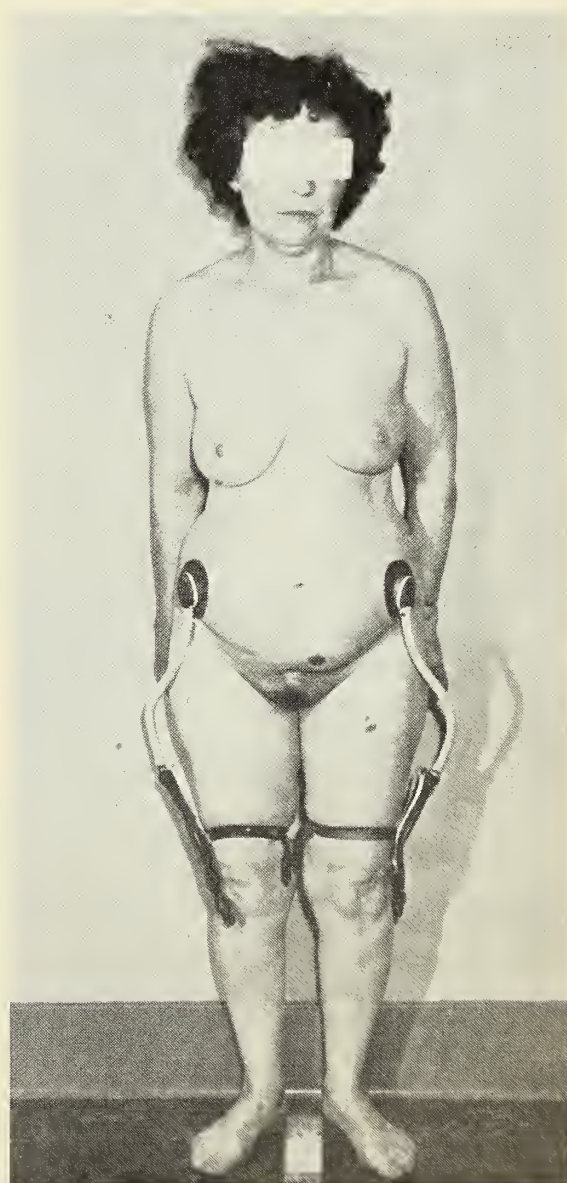


Figure 16. Radical pelvic evisceration. Post-operative state.

cock and Bacon, but my patients have not enjoyed the good continuance of the sphincter that has occurred in their capable hands. I have been using an intussusception technique. The intussusception of the tumor-bearing segment of the rectum or recto-sigmoid cannot be prolapsed readily through the manually dilated but intact sphincter in patients who are fat, or have much fat in the mesentery or surrounding the rectum and the sigmoid colon; but in a thin subject with an early cancer of this type, it is indeed a very satisfactory and easy method of dissection, and one that is rather dramatic to witness.

The operation is started abdominally in a manner similar to an ordinary abdomino-perineal rectal resection. The bowel is mobilized, but not transected. The mobilization of the bowel must be more complete than for the ordinary abdomino-perineal rectal resection, and it is dissected free down to the pelvic floor; this is a matter of very great importance because there must be no point of attachment of the bowel above the pelvic floor. The bowel is not transected at this time.

An assistant then inserts sponge forceps with fenestrated tips, through the anus and rectum into the colon. The operator can feel this instrument. A breach of aseptic technique is intentionally done by perforating the bowel through the fenestra of the forceps with a heavy curved needle and thread tying the bowel and tying below it, so that the colon is well fixed to the clamp above the location of the small cancer in the rectum. The abdominal wall is then

closed in layers without drainage and without colostomy.

The patient is then placed in the lithotomy position with the sponge forceps protruding from the anus. The rectum and ligated distal colon are thoroughly cleansed and irrigated. The rectum is manually dilated, antiseptic solutions are used within the lumen, and then the protruding clamp is covered with a sterile rubber glove. The operator merely grasps the clamp and by pulling on it the bowel becomes intussuscepted. It is done without great difficulty if the dissection from above has been complete. As the bowel does prolapse and come out, even the anal canal is intussuscepted, and the tumor is readily visible on the outside surface. With the scalpel, a circular incision is made just above the anus to transect the bowel. The tumor bearing segment of the bowel is withdrawn, and it too is transected well above the site of the cancer. The telescoped cut segments which protrude are then anastomosed, using an outer layer of interrupted silk sutures and an inner layer of interrupted chromicized catgut sutures. The method is similar to the technique sometimes followed for prolapse of the rectum. The anastomosed bowel is easily pushed upward through the temporarily relaxed sphincter, and no external perineal evidence of the operation exists except a stab wound for drainage. These pa-

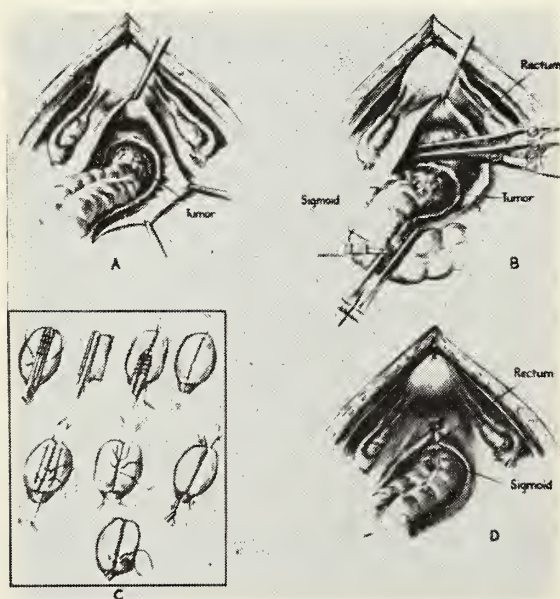


Figure 17. Superior segmental resection of recto-sigmoid with primary anastomosis.

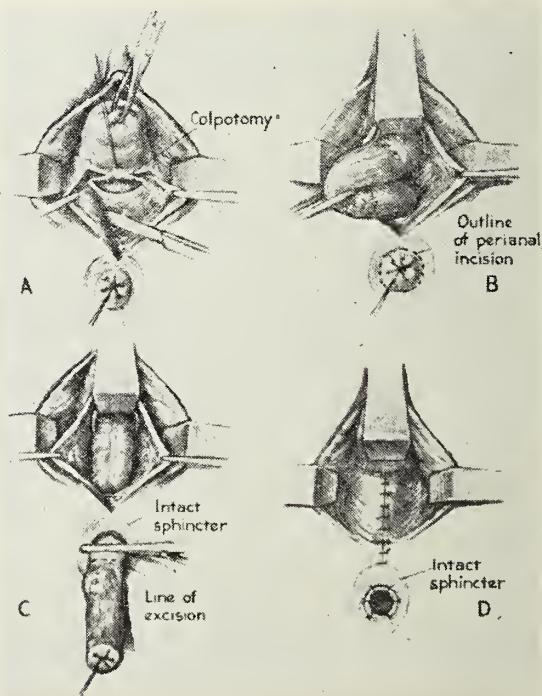


Figure 18. Conservative rectal resection with preservation of sphincter. Burch modification of pull-through technique for females.



tients experience good control of their rectal sphincters.

My only defense for advocating pelvic evisceration on one hand and conservative operation on the other for cancers of the rectum is that one exercise meticulous surgical judgment in the selection of cases.

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## The Relation of Pregnancy to Malignancy

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Pregnancy is accompanied by profound changes in the maternal organism, some of which have close relationships with growth phenomena. It is important then for all of us, in our ordinary daily clinical contacts, to be aware of these relationships and to know something of their practical significance. It is unfortunate that much of what is known regarding this subject is not really factual, but is based upon observations of an incomplete nature, some pointing in one direction and some in quite the opposite direction. We must rely, in our judgments, upon as careful an interpretation of the evidence available as is possible, and we must realize that we may be in error and that as new evidence is acquired we may have to change our opinions.

Among the alterations regularly occurring in pregnancy which may have a bearing on growth phenomena are those in hormone concentrations. One of the chief hormonal changes occurring in the gravid state is a marked increase in the titre of circulating estrogen. It has been demonstrated experimentally that it is this increase in estrogen which is responsible for the hypertrophy and hyperplasia of the myometrium and of the smooth muscle coats of neighboring organs, phenomena which are prominent features of pregnancy. More abundant estrogen is also probably responsible for the marked increase in vascularity of these organs and of the breasts. Estrin is responsible, too, for the significant epithelial changes which occur in the uterus and in the breasts in pregnancy. Since estrogens in general, and other closely related chemical compounds have been implicated in the genesis of certain tumors in animals, it is extremely important that we know as much as we can of the possible relationships of these compounds with human tumors, and of any effect which pregnancy might have upon such tumors.

While pregnancy is accompanied by increase in concentration of hormones other than estrogen, such as gonadotrophin and progesterone, there has been

no evidence to suggest that they have any particular relationship to growth phenomena of the kind under discussion at this time.

Now, for some of the evidence relative to the effect of pregnancy upon tumors: The observation has been made many times that carcinoma of the breast "grows like wildfire" when it co-exists with pregnancy. How reliable such observations are is difficult to determine, but I think it fair to say that in some instances breast cancer does indeed grow rapidly when the patient is pregnant. It has also been observed that under similar circumstances cervical cancer seems to grow more rapidly. The temptation is to attribute the acceleration of the growth of these neoplasms during pregnancy to the increased estrogen titre, although it is very doubtful if there is a specific relationship.

Emge's work 15 years ago with fibroadenomata of the breast in pregnant rats strongly suggested that the acceleration in growth which was present may have been incident to the increased vascularity of these tissues in pregnancy rather than to any specific growth-promoting property of estrogens. Whatever the cause, pregnancy does seem to be associated with some acceleration of co-existent breast tumors in many instances, in both man and animals. Without at this time documenting my statement, I think it is pretty well accepted that pregnancy and estrogens have no effect directly or indirectly upon tumors arising in organs other than those of the reproductive system including the breasts, tissues upon which estrogens normally exert an effect.

Additional evidence contraverting a carcinogenic rôle for estrogens in humans are the following observations:

1. Estrogens may cause temporary regression in certain cases of advanced cancer of the breast. The use of estrogens as a palliative measure in hopelessly advanced cases of mammary cancer in elderly women has been reported rather frequently in recent years. In only rare instances has acceleration of the growth resulted from the estrogen administration.

2. Allen and associates have administered large doses of estrogens over prolonged periods of time to a considerable number of elderly women without having observed any cancers whatsoever.

Let us examine the evidence on the other side of the argument: It has long been known that estrogens increase the incidence and speed the appearance of mammary cancer in certain susceptible strains of mice. Estrogens do not cause mammary cancer in strains in which cancer does not appear spontaneously, however. While estrogens seem to play an important rôle in the production of these mouse tumors, there are obviously other even more fundamental conditions necessary, e.g. genetic constitution.

Both Gardner and Perry have reported the development of cervical cancers in mice after estrogen dosing, provided the animals were saved from mammary cancer or pyometra which often appeared first. However, massive doses of estrogens given to monkeys and other animals over prolonged periods of time have failed to produce cancer of any kind.

It has not been shown that estrogen effects lead to cancer in the human being, but there are several interesting suggestive relationships. In the histories of individuals developing carcinoma of the endometrium, menorrhagia, late menopause, and hyperplasia of the endometrium, all conditions associated with hyper- or persistent estrinism, appear much more commonly than they do in women without carcinoma of the endometrium. The incidence of carcinoma of the endometrium in cases of granulosa cell tumor of the ovary is four or five times the general incidence. In addition, there have been several cases of carcinoma of the endometrium reported following prolonged estrogen therapy. It is also known that carcinoma of the uterus is relatively rare in women who were castrated before they reached the age at which they would normally cease menstruating. Finally, one of the first observations suggesting that there might be a relationship between ovarian function and the growth of breast cancer was that occasionally large, fungating mammary cancers recede in a remarkable fashion after castration alone.

All of these observations suggest that estrogens exert an effect upon the tissues of the reproductive tract, including the breasts, which makes them more susceptible to the development of cancer. It has not been shown, however, that estrogens ever *cause* cancer in humans, or for that matter that they even exert a *specific* accelerating effect upon the growth of an already existing cancer.

There are a number of practical clinical problems pertaining to the relationship of pregnancy and of

estrogens to malignancy which I would like to discuss briefly.

1. Cervical cancer in pregnancy. Such cancers "seem" to grow more rapidly when the patient is pregnant. In general, the rule should be to treat the cancer at once. Sometimes it will be expedient to terminate the pregnancy operatively before starting treatment, though actually the institution of anti-cancer therapy will usually result in the spontaneous termination of the pregnancy in a short period of time.

The only exception to this rule of immediate treatment, I believe, should be when the pregnancy has not quite reached the period of viability. In this event it would seem to me to be justifiable to defer cancer therapy until viability has been reached and delivery accomplished by the most appropriate means, provided that the delay does not exceed three to four weeks at most. Since the treatment of cervical cancer inevitably results in castration, we as physicians are not placed in the position of having to decide whether or not continued ovarian function would have a deleterious influence.

Other forms of genital cancer rarely co-exist with pregnancy and therefore need not be discussed.

2. Breast cancer occurring during pregnancy. As discussed above sometimes pregnancy seems to accelerate the growth of breast cancer. Therapeutic abortion or premature termination of a more advanced pregnancy may often be indicated, but it should never be done, in my opinion, with the idea that it will increase the patient's chance of cure. Pregnancy does not make the difference between the existence and the non-existence of cancer. It is possible, of course, that whatever cancer is present or remains after treatment might be influenced to grow a little faster if the patient is pregnant; sometimes this is important, but not always.

If the patient is far along in her pregnancy, six months or more, it is my feeling that termination is rarely indicated. The breast lesion can be treated in the appropriate manner without regard to the pregnancy.

In like manner, the question of preserving ovarian function in a patient with breast cancer may be discussed. Castration will not, I believe, on the basis of established facts, increase the patient's chance of cure. It may have an influence upon the rate of growth of cancer which may still be present. If none is present, then it makes no difference whether the patient has or does not have ovarian function so far as continued existence is concerned. If the patient is young, however, it may make a lot of difference as to how comfortably the patient exists. For these reasons I believe that usually ovarian function should be preserved in young women.



3. Estrogen therapy after treatment for cancer of the genital tract and breast. This is a controversial subject. In line with the arguments already advanced with regard to pregnancy and ovarian function, I believe that it is quite safe to employ small doses of estrogens in women who have been treated for cancer of the reproductive apparatus, when symptoms cannot be controlled in some other manner. This is not a conclusion based merely upon the reasoning given above; it is a conclusion based upon extensive experience. For years we have prescribed estrogens as indicated for women seen in a cancer follow-up clinic without ever having had occasion to regret it. When we give comparatively large doses of estrogens to women with advanced breast cancer and often see regression it seems foolish to withhold the tiny doses necessary to relieve disagreeable menopausal symptoms in patients apparently successfully treated.

#### Summary

1. Pregnancy, with its increased titre of estrogens, may accelerate the growth of malignant tumors of the reproductive tract and of the breasts.

2. The acceleration associated with pregnancy may not be a specific effect of the estrogens, but may be due to the increased vascularity of these tissues in pregnancy.

3. The termination of pregnancy in individuals with cancer of the reproductive apparatus is often indicated for sound reasons, but in itself will not increase the patient's chance of cure, though it may prolong life.

4. The practical implications of these conclusions are discussed with regard to cervical cancer in pregnancy, breast cancer and pregnancy, ovarian function and cancer of the reproductive apparatus, and the use of estrogens after cancer therapy.

## Treatment of Cancer of the Face, Mouth and Neck with Irradiation\*

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Cancer of the face, mouth and neck was selected as a subject because malignant disease involving the exposed cutaneous surfaces and the mouth is unusually common in the southwestern states. A U. S. Public Health survey conducted in 1939 in the Dallas-Fort Worth area showed 33.8 per cent of 3683 cancers recorded to originate in the skin. Dermatologists believe that this high incidence results from constant exposure to sunlight and hot winds which produce multiple precancerous lesions in the thin, high colored skin observed so frequently in the blondes and sandy complexioned people who make up a majority of our white population. The common practice of using chewing tobacco and snuff in the rural districts may account for the high incidence of intraoral cancer.

#### Treatment

In our clinic the lesions under consideration are treated primarily with some form of irradiation, often augmented by electrosurgery. Some patients are then referred to the plastic surgeon for the repair of defects or the removal of necrotic tissue or of incompletely controlled malignant disease. Although the majority of the cases to be discussed do not require such procedures, it should be stated at the outset that the author believes that the co-

operation of a competent head and neck surgeon is essential if the best results are to be obtained. We are also convinced that the efficient combination of the two methods tends to make some of the recently devised radical operations unnecessary.

#### X-ray Technics

Many efficient technics have appeared in the literature but only those which are used routinely in our clinic will be described in this paper. Epidermoid carcinomas which measure less than two cm in diameter and show little or no infiltration are treated with low voltage roentgen therapy. The treatment factors are: 85 kilovolts, 5 milliamperes, a target skin distance of 16 cm and a filter of 1.0 mm of aluminum. Each small tumor is treated with a transparent cone having a diameter large enough to insure the radiation of an appreciable margin of normal skin. Daily doses of 1200 r (measured in air) are given for four or five days, the total dose being 4800 to 6000 r. The projecting portions of thick lesions are removed by electrosurgery before the roentgen therapy is started. A rather severe reaction appears in about seven days after the treatment is finished and the exposed area may be temporarily denuded. Healing should be complete in six to eight weeks and the scarring produced is minimal. The cosmetic results are good, especially on the lip where the vermilion border is often restored to normal. As with all x-ray technics the

\* This is a condensation of the two papers presented at the Third Annual Mid-West Cancer Conference, which were profusely illustrated with lantern slides. This paper was presented first at a meeting of the New England Roentgen Ray Society, Boston, Massachusetts, April 21, 1950.

gum should be protected, particularly when the teeth are present.

Although large neoplasms have been cured with this technic the reactions are severe and healing is slow. When Coutard first described his divided dose technic with higher voltages in this country in 1932 it impressed us as a worth while procedure for large superficial lesions and our modification was described in 1935.<sup>1</sup> At present the treatment factors are: 220 kilovolts, 20 to 25 milliamperes, a target skin distance of 50 cm and filters varying from 0.5 mm of copper and 1.0 mm of aluminum to 0.8 mm of tin, 0.25 mm of copper and 1.0 mm of aluminum. The area treated should include a margin of normal skin about the tumor and the ports vary from 10x10 to 15x15 cm. As a rule a dose of 300 r measured in air is given daily (except Sundays) up to a total of 3600 r. The sequence of events is similar to that observed with the low voltage technic but healing may not be complete for two or three months after the treatment is finished. Here again it is desirable to remove polypoid masses by an electrosurgical procedure before roentgen therapy is started. Many radiologists produce the same carcinolytic effect by administering a much larger total dose over a longer period of time and contend that the normal tissues are spared by increasing the time factor. In the author's opinion this contention has not been proven and more experimental work should be done in an effort to establish the most favorable time factor.

#### Interstitial Radium Technic

It is our practice to treat all intraoral lesions and many of the larger ones on the face and neck with implanted low intensity radium needles which have been completely described in a recent article.<sup>2</sup> They were first used in our clinic in 1930 and were patterned after needles described by Cade<sup>3</sup> in 1929. With them it is possible to accurately administer carcinolytic doses of gamma rays to tumors of various sizes and shapes and use a relatively long time factor. In the author's opinion this procedure reduces the damage to normal tissues to a minimum and possesses other practical advantages over radon seed implantation described in an article<sup>4</sup> published in 1932.

All of the needles are made of platinum-iridium and have wall thicknesses varying from 0.5 mm to 0.6 mm which are sufficient to filter out all beta rays. The sizes found most practical have over-all lengths of 11.0, 27.0, 51.0 and 61.0 mm, contain 0.66, 1.33, 2.4 and 3.3 mg of radium sulphate and have active lengths of 0.5, 1.5, 4.0 and 5.0 cm, respectively. The radium content per cm of active length varies from 0.66 to 0.88 mg.

When the time of implantation is fixed at seven

days, charts may be prepared from Quimby's tables giving the doses in gamma roentgens delivered at various points about the active lengths of the four needles. Paterson and Parker state that most epitheliomata can be destroyed when each part of the tumor receives not less than 6000 gamma roentgens in eight days and that most areas in the mouth will tolerate 12000 gamma roentgens without the formation of necroses. It becomes evident then that satisfactory results should be obtained with needle patterns so arranged that the point doses within the treated area vary from 6000 to 12000 gamma roentgens. Many such patterns have been worked out and in practice it is only necessary to use one or more of them in doing a radium needle implantation. It is true that the implantation of some of the more complicated tumors requires some ingenuity but the problem is not as difficult as it may seem at first glance.

All needles are stitched in place and attached to guy threads which are tied into a tag with identification information printed on it. Patients receiving this form of treatment are placed in the hospital for a week so that they may be observed each day. Under ideal conditions the reaction reaches its peak in about three weeks and has subsided in six weeks. Healing requires periods varying from six weeks to several months, depending on the size of the needled area, and daily boric acid ointment dressings are applied to skin surfaces until healing is complete. Since the technic recommended does not produce uniform dosage, small areas of necrosis may require special care. External applications of alvangel or vitamin A and D ointment may clear up these complications but in some cases electrocoagulation or other surgical procedures are resorted to.

Intraoral areas are cleansed with a good mouth wash and painted daily with five per cent mercurochrome. Superficial patches of necrosis often respond to the application of Scott's solution once or twice daily. When teeth are removed before low intensity needles are used, bone damage is reduced to a minimum but in some cases, particularly those in which large lesions are treated, it may be necessary to remove devitalized bone with rongeurs or electrocoagulation or to excise portions of the mandible. It is the author's opinion that the number of patients developing this complication is smaller than that observed with any other type of intraoral irradiation.

#### Repetition of Treatment

The radiologist should make an all-out effort to produce a cure with his first series of treatments since the second attempt is never very successful and may actually produce harmful results. If cures



are to be produced the bold application of an efficient technic is preferable to a cautious approach, even though a few untoward sequelae may result. The patient with cancer of the skin who has received relatively small doses of roentgen rays given once a week over long periods of time by the "watch and wait" method constitutes one of our most difficult problems. In these cases the tumor bed has been damaged so that normal tissues may not be able to recover from carcinolytic doses. When recurrent nodules are observed in heavily irradiated areas they should be removed by surgical intervention. The application of large doses of irradiation to such regions will almost invariably produce a slough.

#### Cancer of the Face and Neck

The technics used in the treatment of cancer of the exposed cutaneous surfaces were described in detail in a recent article.<sup>5</sup> It is the author's opinion that carcinomas on the backs of the hands do better with electrocoagulation or surgical excision but all such lesions originating on the skin of the face or neck may be treated successfully with irradiation. The smaller neoplasms measuring less than 2.0 cm in diameter respond well to the low voltage technic while the large ones are successfully handled with the modified Coutard technic or radium needle implantations. The dosages recommended in the first section of this paper are capable of eradicating both basal cell and squamous cell carcinomas, and a differential diagnosis is not too important. Large squamous cell carcinomas growing on the forehead and in the temples seem to respond best to 200 kilovolt therapy. Interstitial therapy is used for large lesions on other portions of the face and neck, particularly when there is much deep induration present.

Small cancers of the canthi and eyelids are treated with low voltage roentgen therapy. The cosmetic results are good and the eyes should not be damaged when protective shields are properly placed beneath the lids. Cancer of the conjunctiva responds to the same technic. When shielding is carefully done the end results are excellent. Our experience indicates that carcinoma of the inner canthus often receives poor treatment in general practice. Recurrences tend to extend well down into the orbit, over the nose or directly inward so as to enter the nasal passage and the ethmoid sinuses. Such lesions have been successfully treated with low intensity needles inserted vertically into the sides of the orbit or longitudinally over the bridge of the nose. In a series of 27 advanced lesions of this type seen from 1937 to 1948 good primary healing was obtained in 25 (88.8 per cent). Of

this group 73 per cent had been treated unsuccessfully elsewhere with caustics, surgery or some type of irradiation. Failures occurred in the patients with deep extension through the bony structures. The five-year salvage amounted to 73.3 per cent. An occlusion of the tear ducts, which often follows irradiation therapy, can be prevented by careful dilatations carried out during the healing stage. A slight conjunctivitis was noted in some of these cases and cataracts observed at the time of treatment became noticeably worse in three. However, these complications seemed preferable to the deformities resulting from radical surgery.

Small cancers on the nose are usually eradicated with fulguration or electrocoagulation. The larger ones respond well to low intensity needles when little or no cartilage is involved. Massive growths which have destroyed much of the nose and extend well down into the nasal passage are handled in a different manner. After the presenting tumor and the involved portion of the nose have been removed with the endotherm knife, x-ray therapy is administered directly into the nasal passage by means of the modified Coutard technic. A round cone covering a port measuring seven cm in diameter is used in most cases. After healing takes place a false nose attached to glasses materially improves the patient's appearance. Plastic surgery may be carried out at a later date but should be delayed for some eight or nine months since large basal cell tumors sometimes recur even when very thorough treatment has been carried out.

#### Cancer of the Lip

Although good results from irradiation have been reported for years all but the smallest cancers of the lip are still handled with surgical procedures in most tumor clinics. It is our practice to use the low voltage x-ray technic on all such lesions measuring less than 2.0 cm in diameter unless they are accompanied by deep infiltration. The lower lip is turned downwards over a lead foil shield placed on the chin and held in place by a cone of the proper size during each treatment. This procedure protects the gums and teeth. The cosmetic results obtained with this method are superior to those produced by any surgical procedure thus far devised. All other carcinomas in this region, regardless of their size, are implanted with low intensity radium needles. As in other locations fungoid masses are removed as a preliminary procedure. When the corner of the mouth or the inner cheek is involved the pattern can be easily extended to include all of the malignant tissue. A small gauze sponge is kept between the lip and the underlying teeth while the patient is awake and in this way damage

to the alveolar margins is avoided. If the neoplasm has invaded much of the mucosa of the lip the eradication of all tumor tissue leaves a defect which may necessitate a plastic repair operation. However, this is done in a surprisingly small number of the patients treated. In a group of 77 patients with advanced cancer of the lip treated prior to 1944 the five-year salvage amounted to 33.7 per cent. In view of the fact that 45, or 58 per cent, of these cases had metastatic cervical nodes at the time that they were treated the salvage rate is considered worth while. It is also worthy of note that primary healing produced by radium needles alone was satisfactory in 80 per cent of the group. In the remainder residual tumor or sloughs were removed by electrosurgery.

#### Cancer of the Ear

It is our impression that in general practice a greater percentage of failures occurs in the treatment of cancer of the ear than any other superficial portion of the body. Carcinolytic doses of x-rays applied over the auricle so frequently produce some damage to the cartilage followed by painful reactions that we now treat almost all small cancers in this structure with fulguration or the endotherm knife. Although some deformity may result such an easy method has proved very satisfactory in a busy clinic. Painful necroses observed following the application of large doses of low voltage x-rays to one surface of the ear can often be handled satisfactorily by dissecting out a button of cartilage somewhat larger than the damaged area. Immediate relief of pain is obtained and the resulting defect is not unsightly when the underlying skin surface can be left intact.

The care of cancer of the ear becomes difficult when the whole auricle is involved, when malignant tissue has extended into the auditory canal or the surrounding tissues and when the cervical nodes are invaded. Such cases may be said to be advanced. The following plan of treatment has yielded the best results in our hands. After the involved portion of the auricle has been removed flush with the side of the head with the endotherm knife, the remaining deep seated cartilage is removed by blunt dissection. The residual tumor tissue now lies in a single plane which can easily be implanted with one of the standard radium needle patterns. When the external auditory canal is invaded small 0.66 mg needles are stitched around its periphery. The treatment of metastatic nodes will be covered in another section. Radical surgery carried out in this region must of necessity damage the facial nerve. Since low intensity needles do not affect nerves they provide the method of choice.

A group of 35 advanced cases treated three to

seven years ago by this method has been studied. Good healing occurred in 22 (63 per cent) and 18 (51.4 per cent) remained well for three to seven years. Failures occurred in the patients who developed deep bone invasion or distant metastases.

#### Intraoral Cancer

The surgical management of cancer within the mouth is difficult and even the most radical operators depend to some extent on irradiation therapy. In different centers various combinations of intraoral cone therapy, external roentgen therapy, intraoral radium contact devices or implanted radon seeds are used. In our clinic technics have been developed whereby low intensity radium needles can be used for all intraoral lesions except those situated very high or very low in the pharynx. A rather extensive experience has convinced us that this plan produces the best results with the fewest sequelae.

The selection of the correct pattern in a given case and the proper insertion of the needles sometimes becomes a tedious and time-consuming problem, particularly when the tumor is large and involves several portions of the mouth. However, the restoration of function with a minimum of deformity justifies all of the trouble involved. Patterns which have been used successfully in carcinomas of the inner cheek, floor of the mouth, gums, anterior pillar, soft and hard palate, tonsil and the various portions of the tongue have been published.<sup>2</sup> The more enthusiastic advocates of low intensity radium needles such as Cade<sup>7</sup> and Paterson<sup>8</sup> have not used them in close proximity to bone. We are now engaged in a study of a series of approximately 100 cases with cancer of the gums treated exclusively with this method. Although the study is not yet complete we are impressed with the low incidence of bone necroses requiring secondary surgical procedures and now carry out implantations on the hard palate as well as alongside the alveolar margins without fear of serious sequelae.

Although actual malignant invasion of bone is still looked upon as an indication for radical surgery marked improvement has been observed in some such lesions following the use of low intensity needles and it seems possible that the danger of dissemination of malignant cells at operation may be lessened by such preliminary treatment.

A group of 218 patients with intraoral cancer treated with needle therapy prior to 1946 has been studied carefully. Although many of these cases were far advanced good primary healing was obtained in 139, or 63.7 per cent. More than one-third of the lesions in 93 cases that have remained well for three or more years measured 3.0 cm or more in diameter. The five-year salvage in 171



patients treated prior to 1944 was 40 per cent. When one considers the fact that many of these cases had metastatic nodes, that some were untraced and that others died of intercurrent diseases, a five-year salvage of 40 per cent seems worth while.

#### Metastatic Cervical Nodes

The complete care of patients with cancer of the head and neck must include the treatment of metastatic cervical nodes. Although block dissection is generally accepted as the treatment of choice it offers little hope of cure except in carefully selected cases. Brown and McDowell<sup>9</sup> have published an analysis of the results obtained in 410 operable cases selected from six of the best surgical centers in this country. The five-year salvage for this entire group was reported as 25 per cent. Since many patients are not suitable for surgery this figure indicates that more than three-fourths of the entire group will eventually be referred for irradiation therapy. A problem of this magnitude justifies an intense search for better methods of using irradiation.

The author has been able to completely control no metastatic cervical nodes with any form of external irradiation available to him except some of those which are secondary to transitional cell carcinomas in the pharynx. It is our belief that the dose needed to cure epidermoid carcinoma growing in a lymph node is considerably larger than that needed to cure the primary lesion. If this concept be true efficient treatment necessitates the administration of very large doses. In 1929 Quimby and Pack<sup>10</sup> showed that the skin will tolerate very large amounts of irradiation when the total amount is given partially as gamma rays and partially as 200 kilovolt x-rays. In 1931 Quick<sup>11</sup> advocated a combination of radon seeds implanted in a metastatic gland with external x-ray therapy as a curative procedure. In 1940 Martin, Munster and Sugarbaker<sup>12</sup> described the technic in detail.

The weakness in this technic seemed to lie in the small areas covered and in the poor distribution of radon seeds shown in roentgenograms of implanted areas. The substitution of long low intensity radium needles for seeds not only provides a better distribution of gamma rays over a larger field but the heavier filtration which eliminates all beta rays gives a better factor of safety for the normal tissues. In most locations it is possible to insert a planar needle pattern into the lymphatic bed which carries efficient irradiation well beyond the palpable nodes. The first patient receiving this plan of therapy was treated in 1935 and he is alive and well today.

At the present time the procedure is carried out as follows: low intensity radium needles are first

inserted through small incisions in the skin of the neck so as to set up a planar pattern designed to deliver doses ranging from 6000 r to 12000 r to the palpable nodes and neighboring lymphatics in a period of seven days. On the day after the needles are placed x-ray therapy is started. The factors are 220 kilovolts, 25 milliamperes, a target skin distance of 50 cm and a filter of 0.4 mm of tin, 0.25 mm of copper and 1.0 mm of aluminum. A dose of 350 r measured in air is administered daily until a total of 2100 r has been given. The portals vary from 10x10 to 10x15 cm. The technic has been described in more detail in published articles.<sup>13, 14, 15</sup>

Since 1937 all head and neck cases entering our clinic with metastatic cervical nodes secondary to epidermoid carcinoma have been treated in this manner and the total number exceeds 300. A series of 146 patients treated prior to March, 1944, was reported at a recent meeting. Of this unselected group 40, or 27.3 per cent, have remained well for five or more years, 91 are known to be dead and 15 are untraced. Although the follow-up studies were not complete we can report that the palpable nodes disappeared in 102, or 70 per cent, of the entire series.

In old age groups five-year statistics do not reflect the true worth of a method of treatment. An analysis of the 91 cases that did not live five years and are known to be dead bears this out. Only 46 of these patients died of the cancer treated, while the remaining 45 succumbed from a variety of other causes.

All of the 146 patients reported had proven primary epidermoid carcinomas but since no block dissections were done, histological proof of the presence of cancer in the enlarged nodes was lacking in most instances. Rapid extension of the disease following the removal of single nodes for diagnosis observed soon after we started the work induced us to discontinue this method of diagnosis. A large experience with head and neck cases has led us to believe that our clinical diagnoses are rarely wrong except when the palpable nodes are very small. The needle biopsy method has been used for several years and the high percentage of positive reports obtained on nodes diagnosed as malignant by clinical observation has strengthened our confidence in the clinical diagnoses made in the reported series.

Since some surgeons still contend that no patient with proven epidermoid carcinoma in cervical lymph nodes has ever been cured by irradiation alone a series of 17 patients with histologically proven nodes treated prior to 1944 was studied. It was found that nine of these patients have survived for periods varying from five to ten years.

Many seem to have the opinion that our rather heroic therapy gives rise to extensive fibrosis and scarring which later produces excruciating pain in the neck. It is true that the overlying skin shows some atrophy and freckling and areas of telangiectasis sometimes appear, particularly in the lower cervical region. When large areas are treated some subcutaneous scarring results and it may produce a moderate degree of stiffness of the neck. However, none of these reactions is painful. A histological study of tissue removed from areas producing pain has almost invariably revealed the presence of uncontrolled cancer.

#### Summary

Radiological technics are described which may be used with considerable success in the treatment of cancer of the face, mouth and neck without the use of radical surgery. They are economical in that the time needed for their application is rela-

tively short and the equipment required is modest.

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## Recent Advances In Cancer Therapy

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It may seem to many of us that we are not getting very far in the treatment of cancer but I assure you that the picture has changed considerably in the last ten years. I should like to review with you the three fields in which I think there have been some advances made, and indicate some of the tendencies that research is taking. The three fields are: (1) the newest one, that of chemotherapy and its subsidiary, the endocrine approach in the treatment of cancer; (2) the field of radiation; and (3) surgery.

Chemotherapy has only recently played any important part. It is still essentially a research problem. There is no drug today that will cure cancer as far as we know. We have had a lot of disappointing results. We have all been through the teropterin phase which was completely innocuous both to the patient and the cancer, but this opened up the era of the anti-folic acid derivatives, and a number of exceedingly toxic derivatives have been found. One of these, aminopterine, will affect cancer, and cause regression. It has not cured anybody yet, and its most useful field is in bone marrow disease, particularly myelogenous leukemia. The drug is not practical in the treatment of most other tumors however, because it is so exceedingly toxic. I think it is fortunate that the Borgias didn't know about it. There are many other drugs that are being investigated; urethane, stilbamidine—we could go on

through the whole list—all of them are essentially still in a research field.

A practical advantage, however, has come from the endocrine research. This was opened up about ten years ago as you all know, by Dr. Huggins, through his demonstration of the reaction of human prostatic cancer to castration or to the administration of estrogens, particularly in the form of stilbestrol. This was the first demonstration of the relation of the human tumor to the endocrine system. We have known about it in animals for a long time; but this opened up the field in human beings. Since then, mammary cancer has become an exceedingly important field of investigation in endocrine relationships. This was started empirically, after the demonstration of the effect of estrogens on prostatic cancer; it occurred to somebody to see what androgens would do in mammary cancer. And then it was found that estrogens would work too in certain cases.

I will summarize for you our feeling about the use of these drugs in advanced mammary cancer. In the first place, I want to make two things clear. These hormones should never be used prophylactically; and they should never be used to treat breast cancer that can be treated effectively by any other means. They are in no sense a substitute for the standard, known curative treatment of cancer. They



do not replace surgery nor do they replace radiation, even as part of the definitive treatment or as palliative treatment. They should be used only in the advanced case of dissemination where treatment by any other means is not practical. There are two reasons for this: (1) These hormones are exceedingly dangerous—they are a double edged sword, and must not be used carelessly. They are dangerous because either estrogen or androgen will, in some instances, speed up the growth of cancer. So far we cannot predict except in a general way in which cases that may happen, so you may make your patient worse. (2) In the hypertensive or latent cardiac these steroids will cause sodium and water retention and particularly the androgens may create an acute cardiac decompensation. In our earlier work on this, we had to hospitalize several of our patients as emergencies before we realized this fact. Androgens are more dangerous in this manner than the estrogens but either can do it. Another thing that we have observed which illustrates that last point is that women following radical mastectomy who have just a latent edema without swelling of the arm—bare compensation in the lymphatic return on that side—may, if they are given androgens, get an acute swelling and massive edema within even a few days. This simply is an illustration of the effect which these steroids can have on sodium and electrolyte balance.

Now we use the androgens in advanced mammary cancer in women whose cancer started before, or during, or shortly after the menopause. The standard dosage is 100 mgm. of testosterone propionate given intramuscularly three times a week. Sometimes we will give this daily for five or six days. If within three to four weeks there is no regression, the drug is not going to be useful. In our series, we have found that in about 40 per cent of these women of this age group, the tumor will react with significant regression. This regression occurs both in soft tissue and in bone. It is temporary, although we have a few patients who have gone on now for three and four years with repeated courses after reactivation.

There are other annoying side effects of the androgens if they are given in a therapeutic dose. These patients will develop acne like an adolescent boy; they develop hirsutism, they have to shave; there is a masculinization, with deepening of the voice; there is an increase in libido and these are changes that are quite definite, and as I say, quite annoying to many women.

With the estrogens, on the other hand, the dosage is quite different. There we use only three to five milligrams a day, by mouth. This is a physiologic

dosage and in the postmenopausal woman with an intact uterus, this dosage will cause physiologic stimulation. The endometrium will react with a normal menstrual cycle, symptoms will cease with withdrawal of the drug every month. It also will make fibroids which have been quiescent since the menopause bloom like peonies in May; it will cause cervical erosion. In a patient with cervical stenosis, hematometra has been created; and it will create changes in the opposite breast of these women. There are a lot of physiologic reactions that occur, so remember that these hormones are double edged swords and we must be careful. In my opinion, they must not be used prophylactically, and they must not be used when any other effective method of treatment is indicated and available.

This (slide) illustrates an osteolytic metastasis with collapse of a lumbar vertebra from a mammary cancer. This is in a relatively young woman. She was put on androgens, and this picture is some four months later, showing the recalcification. Now in many of these patients pain will be relieved without roentgen evidence of the recalcification. I can't explain that but it nevertheless is true. These patients also develop an increased blood count, which is part of their sense of well being and euphoria if you will. We didn't realize that for a while. We kept taking blood counts to watch them and finally realized that in practically all of them their counts increased and we felt that would be better. These patients will gain ten to twelve pounds during the first month of treatment and that of course is simply water retention. When you stop the drug, they have a diuresis almost as if they had been given mercuripurin.

This (slide) is an illustration of the effect of estrogens. This woman had a large fungating mammary cancer with massive axillary metastases. She refused surgery, which from our point of view was just as well. She was put on stilbestrol and she had no other treatment. Four months after beginning treatment, the lesion had regressed entirely clinically, there was just a slight palpable thickening there and yet biopsy still showed viable cells. You can see the tremendous difference. The estrogen was continued for a few months and discontinued after eight months of treatment and the tumor reactivated and grew up to a fairly large size again, and she again reacted to administration of stilbestrol.

Stilbestrol in the older age groups, over 65, is much more effective than the androgens, and we use it in that age group; and use the androgens in the younger age group. The group that gives us the most difficulty is the ages from about 50 to 65. We find that in general, the androgens are somewhat more effective.

We are running a test, just a vaginal smear, to test for estrogen activity in those postmenopausal women who show evidence of persistent estrogen activity below a level at which the endometrium will react; we use androgens on those even though they may be 55 to 65 years of age.

Now only about 40 per cent of the patients in either age group will react favorably. The most dramatic results we find are with estrogens in the aged group. Most of the reaction will persist for about ten months and then, even if the drug is continued, the tumor will reactivate in the majority of instances. We have had a few who will go on for two or three years, and the tumor will remain quiescent. If we then stop the drug, in eight or nine months the tumor will again reactivate, and will then regress. We don't know how long this will go on.

We have some patients who reacted to testosterone and then become refractory to it; and the tumor then reacted to estrogen. Some of them will become refractory to estrogen and then will again react to testosterone. So it is a confused field about which we do not know very much, and I just want to impress upon you that these are somewhat dangerous drugs to use indiscriminately.

The next area of advances in cancer therapy is in the field of radiation. I think this will have been adequately covered for you by Dr. Lawrence and by Dr. Martin, and so I will not comment except to mention two areas that I think are of interest.

One is the use of the betatron. This is still entirely in an experimental stage, but we have found that in many deep seated, deep lying cancers we can produce regression with this modality that we cannot with conventional x-ray machines. We have found some confusing and surprising things. The exit dose with the use of this instrument is much higher than the entrance dose. The absorption curve is almost the reverse of the usual x-ray machine, and we have unwittingly in the first few cases created severe x-ray burns, severe x-ray dermatitis and even sloughing in the portal of exit with almost no reaction on the point of entrance. The tumors react exactly as they would to conventional x-ray, with the tumor dose expressed in roentgens, but with this instrument we can deliver a much higher dosage to esophageal lesions and other rather deeply lying tumors.

As a surgeon, I must admit that I suspect that this form of treatment may possibly replace surgery in the treatment of at least upper thoracic esophageal lesions. We have exactly the same problems with it however. If you destroy the cancer you get mediastinitis, and a fatality if you destroy cancer that has

gone clear through the esophageal wall. So the problem is still an experimental one but we do have a new weapon which will deliver a much greater tumor dose in depth than conventional x-ray machines have done so far.

Now in the field of isotopes, far be it from me after Dr. Lawrence to say even a word. But I would like to discuss one phase of thyroid carcinoma which to me is one of the most fascinating observations in human cancer in years. This fact has also changed our point of view in the surgical treatment of thyroid cancer. It has been demonstrated in a few instances that metastatic thyroid cancer which is rather undifferentiated, which does not pick up radioiodine, can be made to redifferentiate towards the normal, take on a more normal appearing histologic picture, and can be made to pick up radioiodine when all the normal thyroid tissue has been removed. So far, we think this is best done surgically, rather than to destroy the normal thyroid with radio iodine, because we may reach the limit of tolerance dose in attempting to eliminate the normal thyroid tissue. Now that is the first time that we have seen a human cancer redifferentiate towards the normal in a state of physiologic need—in other words in a state of myxedema after the complete normal thyroid has been removed. This can also be enhanced by the use of thyrotropic hormones. This is still in an experimental stage, but it is practical enough now that it has changed our approach to thyroid cancer with disseminated disease, or even without disseminated disease. We feel, at the moment at least, that the treatment of thyroid cancer is still fundamentally surgical, and even though most tumors are unilateral, and the opposite lobe may be uninvolved, we believe now that a total thyroidectomy should be done, probably in all cases. In other words, we want to prepare the patient in case he later develops distant metastatic disease. We also want to prepare him for radio iodine studies later. We can control his thyroid metabolism easily and simply by a few tablets of thyroxine by mouth per day, so that a total thyroidectomy, if we can leave the parathyroids and at least one recurrent nerve, is not too bad a problem for the patient. I think that has been one of the most interesting things that has developed in human cancer material in some time—this demonstration of the redifferentiation towards the normal.

Now there are two changing concepts that are important. One is a somewhat philosophic one and the other has direct practical bearing. One is the concept of field cancerization in the multicentric origin of tumors. This (slide) is an obvious example of such, in a roentgen dermatitis in a man with



multiple changes and multiple carcinomas of the face. He was treated with x-ray for acne in his youth, and you see the late result which is so common. I show him simply as an example of multicentric origin and field cancerization. It is possible that many tumors, particularly in stratified squamous epithelium, arise from a preconditioned field of epithelium and arise in many cells at once.

Here (slide) is an example of a perfectly characteristic early carcinoma of the lateral border of the tongue in a typical location. Here is the tumor that we see clinically. This granular change posteriorly does not look particularly significant, and it might be that it might not be included in the radiation port or in surgical excision. This (slide) is a low power view of that tumor, this is the raised palpable lesion, the obvious cancer that we saw anteriorly. Here is the granular area posteriorly. I want you to pay particular attention to that area which looks somewhat like the boot of Italy. This is a higher magnification of that, and we see it as an isolated focus of cancerogenesis arising from an apparently benign overlying epithelial mucosa. You can see carcinoma streaming down from it; that area is surrounded by abnormal but benign epithelium. These other cancer aggregates can be traced on serial sections back to such isolated foci of cancerogenesis. It is an example of multiple origin.

The same thing is true in other areas. Here (slide) is the colon from a man who in 1930 had a posterior resection for carcinoma of the rectum. Later he developed a carcinoma of the splenic flexure, then he developed a carcinoma of his colostomy and finally a colectomy was done and he had multiple carcinomas and polyposis, again an example of multicentric origin. We must keep this in mind in these areas in which we can show such a condition.

In a study of multiple tumors done several years ago, a study of some 1868 instances of multiple tumors, the interesting finding was that the majority occurred in the same organ or pairs of organs. Now that is important.

Skin, of course, is the most common, and skin and lips; colon would be next, and somewhat to my surprise, stomach was more common than I had realized. As to multiple carcinomas of the paired organs, the breasts because of their normal incidence, would be the most common site of bilateral tumors; ovaries are less than you would expect but we all know that bilateral ovarian carcinoma is exceedingly common, but it is not reported because of the possibility of peritoneal metastases from one to the other, where that does not apply in testicular tumors; kidneys we know about—bilaterality there is mainly in children with Wilm's tumors. The concept of the

multicentric origin changes somewhat, at least, my intellectual approach to the treatment of these lesions.

Now the second concept that is important, the old teaching that carcinomas metastasize by lymphatics and sarcomas by veins, is not true. Sarcomas do metastasize essentially by the venous system. We know today that many carcinomas metastasize by the venous system, particularly of the breasts, thyroid, kidney, prostate, lungs, etc. But, probably the most common malignant tumor affecting human beings is squamous cell carcinoma; the skin, mucosa of the oral pharynx, metaplastic variants in the bronchi, trachea, nasopharynx, naso-sinuses, urinary bladder, vagina, and cervix are rather common sites, so that I think it is fair to say that squamous cell carcinoma is probably the most frequent form of malignant tumor.

Now this one has a minimal tendency to metastasize by vein. That is important because it means that it is a lymphatic metastasizer and is essentially a localized disease. If we can eliminate it locally, it is possible to cure the patient. We do not have the problem, in other words, of disseminated metastases into the liver, lumbar spine, lung, brain, etc. from this tumor that we have in others. We have it, of course, but in no ways near the same percentage, so it allows us an intellectual reason for widening our surgical attack. This has been of greatest benefit in head and neck cancer; and in recent years there has been developed an approach to advanced head and neck cancer which demonstrates that we can salvage a few of these patients.

Here (slide) is an instance of such a situation. This is an excavation of a mandible due to an extensive cancer of the floor of the mouth and tongue extending directly into the mandible. This lesion had had heavy radiation to the maximum point of tissue tolerance. Bone was invaded by direct extension, and of course you can't see them but there were extensive cervical node metastases.

Now with the advent of antibiotics, our better understanding of fluid balance and shock, multiple transfusions and a perfection of tracheal anesthesia, and with the realization that these tumors are lymphatic metastasizers and possibly confined to this area, an operation has been devised to attack this type of problem which isn't new by any means, but which now can be done with a reasonable mortality. That is a combined radical neck dissection with removal of the jaw and the involved soft parts of the mouth in continuity.

The neck dissection consists essentially of removing everything between the skin and scalene

muscles except the carotid arteries and the vagus nerve. The tissues removed from the neck are left attached to the mandible, which is resected with a gigli saw, and the excision made to include any involved tissues of the mouth—even a hemiglossectomy if the tongue is involved although the tongue is not disturbed if not involved in extension of the tumor.

Repair is effected by suturing the buccal mucosa of the raised cheek flap to the medial cut edge of the soft parts, and in this instance again, the tongue, but unless the tongue is involved, it is not disturbed. This re-constitutes the oral cavity and separates it from the neck. The skin flaps are then approximated, using a double row of interrupted corgut—triple or quadruple 0 size in the mouth. The skin flaps are reapproximated over the drains which are placed wherever it is most convenient.

A surgical specimen of such a lesion (shown in a slide) included a deeply excavating ulcerating carcinoma of the floor of the mouth and gingiva; the symphysis and angle of the mandible; submaxillary gland metastatic disease in nodes; the jugular vein, sternomastoid and omohyoid muscles, etc.

That would seem to be an exceedingly brutal operation. It is not nearly as bad from the standpoint of either appearance or function as we expected it to be. Most of these people are in age groups in which function is much more important than appearance, and it is apparent that we can cure, by this means, from the standpoint of a five year salvage free of disease, some of these formerly hopeless problems.

Here (slide) is an old gentleman who was 78. When we first saw him he had a huge carcinoma of the buccal gutter and gingiva; it had ulcerated through the whole thickness of the cheek, fungating out and extending almost to the midline. The commissure of the mouth was involved, bone was involved, and he had massive metastases in the neck. He was a perfectly miserable individual. That type of patient is salvagable and he is much happier. This man was operated upon three and a half years ago. He has gained weight, follows his business, is still active, and is happy about the whole thing. He, I think, is a complete salvage.

This man (slide) was 65. He had had again a carcinoma of the buccal gutter and mucosa which had been treated elsewhere by radiation. The lesion had recurred and he had had maximum radiation to the point of necrosis of the mandible. He had recurrent cancer in an area of early necrosis with massive metastases to the neck fixed to the under surface of the mandible. Bone was invaded in two ways, both from above by recurrent buccal (residual)

cancer, and from below by metastatic disease.

He had such a trismus that he had to have a tooth extracted to take liquids. He had been home for a year on morphine, given up as a hopeless problem, with people waiting for him to die. After getting him in better condition by restoring his proteins to normal, getting his K, and C and other vitamins to a normal status—in other words temporarily and artificially bringing him back to a normal physiologic balance—this procedure was done. It is now over five years since his operation and this man is working as a night clerk in a Chicago hotel to this day. So, we can salvage some individuals today whom, as I say, we considered completely hopeless even a few years ago.

We have applied this principle to a few selected cases elsewhere, of squamous cell epidermoid carcinoma. Since we realized that they are not early vein invaders, it is a local problem. Here (slide) is an example, a young man of 29 who came in with a huge carcinoma of the larynx, and bilateral neck metastases. He came in as an emergency, and required a tracheotomy. He almost lost his life before that could be done. The lesion had completely destroyed the thyroid cartilages, the thyroid gland was invaded, the trachea was destroyed. How he had been breathing that long I don't know. He had entirely lost his voice already and almost completely lost his life.

Tracheotomy was done as an emergency measure and he was temporarily salvaged. He was then checked over thoroughly to see if there was clinical evidence of metastatic disease. There was none, and an attempt was done at a bilateral neck dissection, total laryngectomy, total cervical tracheectomy, total thyroidectomy. This was done and was done more extensively than the artist has indicated here. We did the lesser involved side first, and spared the jugular vein, and then we went ahead and completed the other side. This was all done in en bloque dissection. His pharynx was involved and we had to do a partial pharyngectomy along with the laryngectomy, tracheectomy, thyroidectomy and bilateral neck dissection. He had bilateral neck nodes which were involved extensively with metastatic disease. We can't take both jugulars at one time, or at least I wouldn't do it. This operation was done four and a half years ago. This man is working on his farm. He has a good esophageal voice and can carry on a long distance telephone conversation, and so far is entirely well. It is seldom that we can achieve such a result, but in well considered cases, it can be done, and it is reasonable to try in a few of them, and this sort of thing keeps us trying. This is by no means the usual result; it is



unusual and lucky, but it does serve to keep us working at it.

Carcinoma of the esophagus is another area of real surgical advance. This (slide) shows a lesion in the lower cervical esophagus. I think today that we have a better chance of cure of cervical esophageal lesions than we have of thoracic, at least of the upper and middle thirds of the thoracic esophagus. The reason for that is that in the thorax, we are confined to tubular dissection for excision of the esophagus. We cannot go widely laterally and take adjacent structures as we can in the neck. We can't take aorta and heart, etc. In the cervical esophagus, however, we can, we can take trachea, larynx, thyroid, bilateral neck dissection if it is necessary. So theoretically we have a better chance here than we have in the thoracic area.

We haven't done much about this until recently when two ways of reconstructing the patient's physiology have been devised. Watson and Wookey at about the same time devised a flap method of reconstructing the cervical esophagus which is quite satisfactory, and of course in recent years, we are bringing the stomach up through the diaphragm, right into the neck, even to the pharynx if necessary and doing an esophago-gastrostomy in the neck. That is feasible and can be done and is one of the more recent approaches to this problem.

We are doing another thing for lesions of the upper third, which is, to my mind, the worst problem; we are resecting if possible, and then bringing the stomach up, and moving the lower esophagus up into the neck and doing a Wookey, for lesions which would not ordinarily be thought suitable for such a procedure. Again that is squamous cell epidermoid carcinoma, and we are more justified in extending our methods of surgery.

One of the most common of malignant tumors is cancer of the cervix. That again is epidermoid carcinoma, and it has been demonstrated that in a reasonable percentage of patients, at autopsy (which is as advanced as cervix cancer can get) it is confined to the pelvis. Again, it is not a vein invader. It is a lymphatic metastasizer and most of these women die from uremia, both ureters involved by cancer on either side.

Now there has been a significant increase in the surgical treatment of cervical cancer in recent years. I am not going to go into that, but from the standpoint of this concept that I have mentioned of the behavior of squamous cell cancer limiting itself to metastasizing by the lymphatics, Brunschwig has devised a radical procedure which is a combined abdominal-perineal resection of the uterus, rectum, bladder, vagina and so forth in one stage with both ureters being transplanted into the sigmoid.

This operation is only applicable in a limited group. Where the carcinoma of the cervix recurred after adequate radiation, and has produced, by cancer, a vesico-vaginal fistula, and a recto-vaginal fistula, the situation is hopeless from any other standpoint, and if the disease is confined to the pelvic area, theoretically it is possible to cure the patient by such a procedure. It is a radical approach but today it can be done with a fairly reasonable mortality rate.

Now I am not at all certain that this will ever become a standard part of our surgical repertoire. I am not at all satisfied with the procedure in my own hands. It is entirely an experimental procedure and I think that we should consider it as such until a great deal more work has been done in evaluation. I don't think there is any more than a three year survival yet, the mortality rate runs around 25 per cent, and even with this physical situation the indications should be limited, at least in my mind, also by the patient's psychologic point of view. There are very few patients who can take this sort of thing postoperatively, if they survive, and it may well be that the living fate is worse than death. This operation has facetiously been called the "All-American;" if we divide this into a "North American" and "South American," then I think we have something. A "South American" would be a situation where a carcinoma of the cervix has invaded the rectum. No general surgeon today hesitates to remove the rectum, vagina and uterus in doing a combined abdomino-perineal resection for carcinoma of the rectum. I don't see any reason why we shouldn't do it from the reverse. Carcinoma of the cervix invading the rectum will kill a patient just as dead as carcinoma of the rectum invading the cervix. I think that is a perfectly reasonable procedure, and I am sure that most surgeons agree. That leaves a patient with a colostomy and a normal bladder sphincter function.

Now the "North American" is the reverse of that where anterior lip cancer has invaded the bladder. If it has gone through the wall, or almost through, that patient is due to have a permanent vesico-vaginal fistula whether she is treated or not. If it is untreated, the tumor will go through. If it is treated by radiation, and cancer has replaced this barrier, it will destroy it, and you will probably have an irreparable vesico-vaginal fistula. There I think the compromise is radical panhysterectomy, vaginectomy as much as necessary and cystectomy and urethrectomy with transplant of the ureters into an intact colon. That preserves sphincter function and is the most satisfactory of the three possibilities; I have a number of happy women who have had that done.

One last word, which not necessarily germane to this discussion, is one of my particular interests on parotid tumors. I base this on my opinion that the average patient in America today, with a parotid tumor, statistically hasn't a very good chance to get over it. We tend to take these tumors and neck lesions not too seriously, and we don't realize that benign mixed tumors can, if they are left alone long enough, or fooled with often enough, become malignant.

Even in advanced cases, there is a chance of salvaging some of these people. Here (slide) is an example of a mixed tumor of 45 years duration, operated on twice, the last time 15 years ago, and I think it is, without any question, an example of malignant transformation of a mixed tumor. This tumor started to grow rapidly after 45 years; and it had been stationary for 15 years and reached this size in the period of six months. Now a point about these massive parotids that is new to me. This man has an intact facial nerve, much to my utter amazement, and that means the tumor is operable, because it is that point which makes a parotid inoperable. All of this is just external—you can chop it off with a hatchet—the point that makes it inoperable is right back here; and if the facial nerve is intact, it is operable.

This is a tenth day postoperative picture. The jaw was involved so that the mandible had to be removed, and a skin graft was placed. He is well so far, only eight months.

I show you this (slide) as an example of what some of these mixed tumors will do if you don't handle them correctly in the first place. Here is another example of a man of 45 who had had a mixed tumor removed three times, diagnosed by good pathologists and then the last of the three times was carcinoma. He had had irradiation, surgery, irradiation, surgery and finally ended up in this situation. I kept him around a few days in the clinic just to scare the students until one of them pointed out to me that his facial nerve was intact. And, much to my surprise, it was, which meant that it was operable.

It was removed and that was four and a half years ago. This man is still all right so far. He had cervical node metastases as did the preceeding one, and a radical neck dissection was done in continuity with the massive excision. Now this man incidentally was an expert furniture refinisher who had given up his job when he came into the clinic in that condition. Afterwards I got him a job with another expert furniture refinisher who has since died of lymphosarcoma.

To summarize, I have tried to go over some of what I consider to be significant recent advances in cancer therapy; in surgery we do have some justification in a few fields for extending our limits of resection. Sometimes I think that all we have done is to "go an inch wider," but with some thoughtfulness, I think we can justifiably extend our limits of excision.





## Alleviation of Cancer Pain

Eldridge H. Campbell, Jr., M.D., and Robert D. Whitfield, M.D.\*

Albany, New York

It was not without good reason that our forefathers termed malignant disease Cancer—the crab. Of its many hideous features, the inexorable spread, the unsightly tumefaction, the erosion, the derangement of function, the wasting and ultimate death, none are more justly dreaded than the pain. There are a few adult patients who do not suspect, or sooner or later realize, their correct diagnosis. No matter how brave nor how well prepared we are philosophically to come face to face with the Grim Reaper, there are few, if any, of us occidentals who can do so without a few qualms. The watches of the night become long indeed.

The ideal control of pain consists in the elimination of its cause. While a surgeon may remove the primary tumor, the painful metastases but rarely lend themselves to such direct attack. On a few occasions solitary metastases have been excised from the brain or lung with more than fleeting relief. Secondary tumors from the prostate may be held in abeyance from a few months to several years by castration or by estrogen therapy; a number of secondary breast tumors have responded temporarily to testosterone or even to the estrogens; a few thyroid metastases have been benefited for a time by radioactive iodine. Nitrogen mustard has proved advantageous in certain cases of Hodgkin's disease, lymphosarcoma and leukemia. The benefits are usually temporary, but may be quite dramatic. Of nine lymphomas followed on the oncology service at the Albany Hospital, five were completely relieved of their back pain for four to six months while two others were partially relieved. A few surgeons have reported its transient benefit to certain metastatic lesions.

Irradiation offers much to certain types of metastatic tumors. In general, the more anaplastic, the less differentiated or embryonically younger the cell, the more likely is it to respond to deep x-ray therapy. Some of the lymphoid group of tumors shrink quite well, while carcinomas of the cervix and body of the uterus may be arrested for long periods. In the brain the medulloblastoma and certain pituitary adenomas may be checked for a good while. On the other side of the ledger are many more malignancies whose responses to irradiation are negligible or fleeting. These are the well differentiated tumors and unfortunately include most of such common

new growths as the gastrointestinal, the pulmonary, and the malignant gliomas. When the microscope discloses a type of cell such as carcinoma of the stomach known to be refractory to x-rays, it is open to question whether or not the risk of adding radiation sickness to the patient's woes is worth the gamble. There comes a time when one's card is up, when it is more profitable to adjust oneself to the inevitable than to waste precious physical and financial reserve on frenzied efforts at reversing Fate's irreversible decision.

From this point to the end of the downhill road, it is well to recall that the doomed suffer not only physically but mentally. Much can be done to mitigate these hardships. If the patient can look upon his physician as a friend, stalwart, true and sympathetic, cheerful, yet avoiding false hopes, frank yet diplomatic, conservative regarding further curative measures, yet constantly seeking to improve his welfare, then will his peace of mind and body be gratefully increased. How pertinent was Samuel Johnson's remark: "It is an alleviation of misery not to suffer alone."

Should one tell the patient that he has cancer? That, in our opinion, depends entirely upon the person and his or her circumstances. We as physicians draw back from hurting or in some cases actually crushing the patient by notifying him of his doom. If, by diplomatic dodging of the awful question, we may let a little more sunlight fall in this vale of tears, why not do so? On the other hand, there are some patients so constituted that they demand the truth at once, and others who for financial or other mundane reasons must be warned of the imminence of their departure. In this case complete frankness is not only necessary but a kindness which seldom goes unappreciated.

Two types of palliative operations on cancers no longer curable are frequently worthwhile, are quite familiar, and are mentioned here merely for the sake of completeness. First is the removal of a fungating or ulcerating primary growth, when feasible, even after metastases have occurred, which has been often advantageous at least temporarily from the standpoint of morale, of unsightliness, of odor and of pain. Second, obstruction of the alimentary or urinary tract can oftentimes be relieved by operative procedures which in this era are relatively simple, and may well repay the effort. Thus, a gastroenterostomy, an enteroenterostomy, an enterocolostomy or a transurethral resection of the obstructing portion of a

\* From the Department of Surgery, Albany Medical College.

\*\* Illustrations published originally in *Surgical Clinics of North America*.

malignancy may obviate one of the least pleasant modes of finishing our course.

#### Analgesia by Drugs

In most cases one eventually comes to lean on drugs for pain relief. Of these, opium in some form or other is our chief prop, and, as Dr. Osler remarked in his own last illness, "It is God's own medicine." However, the perfect sedative has not yet been found. Increasing tolerance and unpleasant side reactions are all too frequently encountered. In some individuals, particularly those cursed with severe nerve root involvement, the control of pain by present day analgesic drugs leaves much to be desired. Alcohol, an excellent analgesic and sedative, is, alas, seldom well tolerated by the patient with advanced malignant disease. When it can be taken, its frequent use should be encouraged. Its administration by intravenous infusion is sometimes advantageous.

Intrathecal injection of alcohol was introduced by Dogliotti in 1931. The method is sometimes applicable to cancer pain in the pelvis and lower extremities. With the patient on her side one or two cc. of 95 per cent alcohol is injected into the lumbar subarachnoid space as near the principally involved roots as possible. Since alcohol rises, the side in which most pain is located is placed uppermost, and the patient left thus for one or two hours. Slight burning and paresthesias are often followed by prompt relief of pain on one side. If necessary the injection may be repeated on the other side in a day or two. The procedure is simple and can be carried out on the ward or even in the patient's home. Unfortunately, the method has a number of serious drawbacks. Weakness of the legs and sphincters not infrequently results. Under certain circumstances this may be accepted as part of the calculated risk, provided members of the family understand fully.

The greatest shortcoming of the method is its unreliability in achieving lasting relief. Although all but one of our 26 patients with metastases in the lumbar spine and pelvis obtained immediate respite, in but 12 was this benefit of more than 48 hours duration. More alcohol increases the likelihood of relief but also of motor and sphincter disturbance. Should the patient already be bedridden, and particularly if the tumor itself has brought about the aforementioned neurologic changes, there is no reason why larger amounts of alcohol should not be employed to ease the Crossing of the Bar.

#### Dorsal Rhizotomy

If cancer pain be limited to a few dermatomes, either unilaterally or bilaterally, and if there is reason to believe that it will not spread elsewhere for

some time, it is sometimes profitable to divide the sensory nerve elements intradurally, thus relieving the pain without loss of movement. Inoperable carcinomas of the mouth, throat, sinuses and nasopharynx lend themselves admirably to this procedure, particularly if unilateral. Face and pharynx can be rendered anesthetic by sectioning the trigeminal and glossopharyngeal nerves, and should there be an overlap into the neck the upper cervical roots may be readily sectioned at the same sitting.\* The senior author had occasion to review 50 odd such cases of his own and Dandy's. There were no operative deaths, and the relief afforded was greatly appreciated by both the patients and their families.

A few bronchogenic and breast carcinomas involve one or occasionally both brachial plexuses with resultant pain which is all but unbearable. Division of the plexus in the neck can be done easily but since some of the nerves may be involved within the intervertebral foramina, this procedure will not surely stop the pain. The sensory roots may be divided intradurally, sparing the motor fibres. It is advisable to extend the denervation well wide of the present pain and, of course, there is no knowing when a distant nerve involvement may occur. In nine patients upon whom we have performed this operation the results were satisfactory (up to several months) in seven, but only for a few weeks in two. In neither of the latter had we extended the denervation sufficiently wide of the pain.

#### Chordotomy

Within the spinal cord fibres carrying pain run upwards in a relatively small bundle in the antero-lateral quadrant. Temperature fibres lie hard by, while pain, touch, and proprioception are far removed. The large crossed pyramidal tract lies posteriorly and can usually be avoided by keeping the incision anterior to the meridian of the dentate ligament (Figure 1). The advantage of chordotomy over rhizotomy lies not only in the ease with which

\*In our experience it has been necessary to divide the trigeminal root completely rather than subtotally to relieve cancer pain. Tic pain will usually be stopped by subtotal division at the pons.

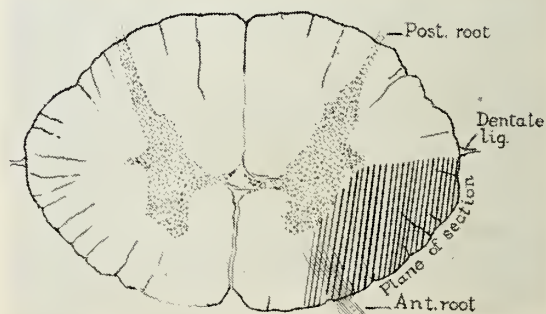


Figure 1. Spinothalamic chordotomy.



it may be carried out but in the much wider areas that may be rendered analgesic. It is of particular value when pain is unilateral and is below the arm level. Here pain relief without serious leg or sphincter palsies may be expected.

The shortcomings of the procedure are, in our hands at least, that cuts made sufficiently deep to secure high levels of analgesia *bilaterally* almost universally result in crippling losses of leg and sphincter power. Should the cancer itself have already brought these changes about, then there is all to gain and little to lose by the procedure.

On the brighter side of the ledger are the reports of White and of Kahn and others in which considerable success has undoubtedly been achieved, particularly when the operation was performed in two stages. It should be noted, however, that many of their patients were suffering from pain not due to malignant disease and therefore by no means so intractable.

#### Lobotomy

The perception of pain depends not only upon an intact sensory pathway, but upon conscious attention to the sensation. It is probable that the thalamus registers the former while the cerebral cortex is essential for the latter. Animals deprived of cerebral cortex react quickly to painful stimuli as long as the thalamus is intact, while man himself can still perceive pain after the sensory cortex has been destroyed. On the other hand, lesions in certain cortical areas, particularly in the frontal lobes, divert attention to such a degree that pain is but briefly noticed and immediately forgotten. Who has not returned from an exciting hunt or fight and discovered cuts or bruises he did not recall sustaining?

In 1937 Freeman and Watts noted that a patient who had undergone prefrontal lobotomy for mental illness was coincidentally relieved of a previously painful disorder. Thereafter the procedure has been carried out many times for a variety of intractable pains. Our concern today is its effect on cancer pain, a problem quite different from that of phantom limb and indeed of other neuritic and neurotic pains. As mentioned above the two most disturbing features of cancer pain are the prolonged and increasing severity and the inevitable emotional underlay, self-limited only by death.

What may be expected of prefrontal lobotomy? At best the patient will display little outward awareness of his pain, may exhibit little in the way of personality change and, ideally to our way of thinking, become relatively devoid of worry and apprehension. Opiates can usually be stopped at once and without symptoms of withdrawal. Of the 29 cases in which the authors have performed this operation

(Figure 2) for cancer pain, 22 were relieved of pain for the one week to 18 months they survived. At the suggestion of Scarff we have performed unilateral lobotomy on the non-dominant side in nine cases with immediate good results in all but early recurrence of pain in six. While the likelihood of profound personality changes and of lasting sphincter disturbance is definitely less in the unilateral group, we believe that in most instances it is more advantageous to carry out bilateral lobotomy at the first operation.

Admittedly lobotomy is accompanied by some risk in any patient in the last stages of cancer. One of our patients with multiple myeloma died of hemorrhage postoperatively. Such an outcome is regrettable but under such circumstances hardly to be regretted. Providing the family understands clearly beforehand what may be expected, most of those who have suffered long and hopelessly with their loved one will and do welcome any form of mental and physical relief.

#### Summary

Pain of cancer no longer operable is inevitably intensified and colored by the patient's knowledge or suspicion of his diagnosis. Metastases from prostatic carcinoma may be held in check months to years by castration or by appropriate hormone therapy; certain breast cancers have responded similarly. A few thyroid malignancies have been arrested for a time by radioactive iodine. Certain

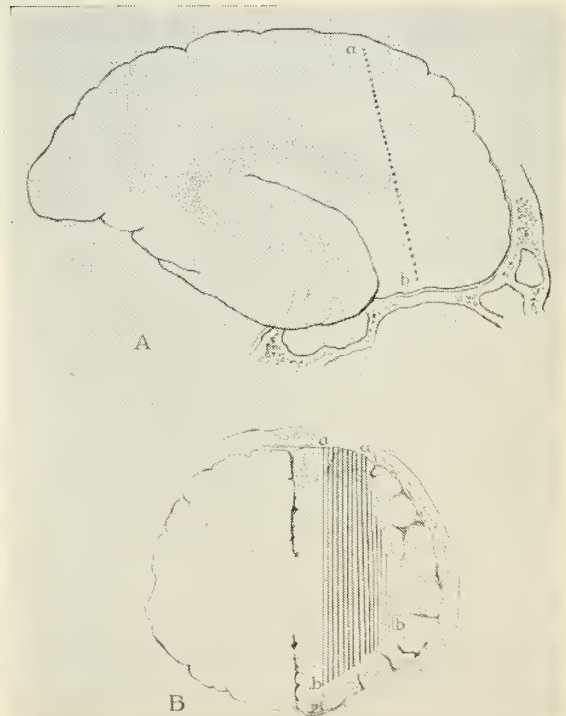


Figure 2. Prefrontal lobotomy.

anaplastic cancers respond favorably to irradiation, occasionally for long periods of time. Nitrogen mustard has been very helpful in certain lymphoid malignancies. For the great majority of inoperable cancers physical relief must be supplied in the form of analgesics and spiritual succor by a wise and

sympathetic physician. In those instances in which opiates no longer abolish pain, surgical denervation of the area or prefrontal lobotomy has considerable to offer. At best, however, any or all of these present methods afford alleviation rather than complete relief.





## Professional Film Loan Library

Professional films on cancer are available on a free-loan basis to professional groups for showing in connection with meetings in which cancer may be discussed.

These groups may be hospital staffs, medical schools, nursing schools, postgraduate courses in cancer, and state and county medical society meetings.

You are invited to write the Kansas Division, American Cancer Society, 506 New England Building, Topeka, for a catalogue which describes the complete series of films available.

Most of the films, particularly those describing techniques in surgical and radiological procedures in therapy and management, are sent directly from the national office of the Society. At least two weeks should be allowed to clear reservations on these films.

A few of the films are available directly from the state office of the Kansas Division, and are therefore more immediately accessible. This list includes:

ACS-1 Cancer: The Problem of Early Diagnosis

ACS-2 Breast Cancer: The Problem of Early Diagnosis

ACS-3 Breast: Self Examination

ACS-4 Gastro-Intestinal Cancer: The Problem of Early Diagnosis

ACS-N-1 What Is Cancer? (For Nurses)

R-1 Radiotherapy—High Dosage Treatment (For Nurses)

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## WHY CANCER EDUCATION?

Dear Doctor:

There are many health and welfare problems which remain unsolved in spite of the spectacular advances of the medical sciences in the past 50 years. In fact, these advances have created some new problems, the solutions of which lie largely in the field of social action. Cancer can be considered to be in this class.

Our medical advisors tell us that while cancer is generally fatal if untreated, or if treated too late, the fact is that cancer is among the most curable of the major causes of death if treated in time. Medical statistics show that when cancer is properly treated while confined to the breast, 80 per cent cures (five-year survivals without evidence of disease) are possible—yet we are curing only 30 per cent of breast cancer. When cancer of the uterus is treated early, 70 per cent can be cured—yet we are curing only 20 per cent of uterine cancer. When cancer of the larynx is treated while the disease is confined to one vocal chord, it can be cured in 75 per cent of the cases—yet we are curing only 15 per cent.

The reason for this dramatic differential is not that the medical profession lacks the technical ability, but that delay between the appearance of cancer's symptoms and the institution of treatment has prevented application of that ability. This delay is primarily attributable to the patient himself, because it is he who first becomes aware of the trouble and who must take the first step.

The average patient with cancer of the larynx delays 3½ months after he becomes hoarse before he asks his doctor to help him. Men with cancer of the bladder wait five months after appearance of blood in the urine before seeking professional opinion. Similar delays are identified with every found cancer, even that of the skin.

The reduction of this critical delay is the objective of cancer education. It is clearly each individual's own responsibility to know the more common early signs and symptoms of cancer, and to know the pristine importance of action when they appear.

The foregoing suggests that motivation of the patient to take the first step is in the area of social action, a field in which the American Cancer Society has demonstrated its competence. It is for this reason that we consider ourselves to be partners with you in utilizing our present knowledge of the cancer problem.

We covet your continuing cooperation.

Sincerely yours,  
Kansas Division,  
American Cancer Society, Inc.



# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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## The Cerebrovascular Accident: A Review of Some Pathological and Clinical Problems\*

A. Theodore Steegmann, M.D.\*\*

Kansas City, Kansas

The term "cerebrovascular accident" or "stroke" is used to denote a sudden injury to the brain or its covering by a disturbance in function of a cerebral blood vessel. This can occur by embolism, thrombosis, or rupture with subsequent intracranial hemorrhage. Embolism by a detached blood clot, gas, air, or fat arises from disease or trauma in other parts of the body in individuals who may have healthy cerebral arteries, and except for the suddenness of onset is clinically similar to arterial thrombosis. The problem of venous thrombosis will not be discussed. The relationship of arteriosclerosis to hypertension and associated vascular disease in the heart and kidneys is so closely bound together that one cannot be considered independent of the other. Arterial disease, due to syphilis, trauma, or infection and arterial hypertension associated with nephritis, urinary obstruction, obesity, endocrine disease, aortic valvular disease, or coarctation of the aorta, belong to the less common causes of cerebrovascular accident and need not be further mentioned.

It is interesting to compare some statistics taken from data of the United States Public Health Service regarding some principal causes of death in the United States during the past half century (Figure 1). Tuberculosis has greatly declined as a cause of death, but death from cancer has steadily risen, but not as phenomenally as death from heart disease. It is well known that arteriosclerosis, whether associated with arterial hypertension or not, has a tendency to injure three vital organs; namely, the kidneys, the heart, and the brain. There has been no change in the number of deaths from nephritis and cerebral vascular lesions comparable to the rise in death from cardiac disease. The strain of living is unquestionably greater now than 50 years ago, yet it is not clear why other organs vulnerable to vascular injury in arteriosclerosis and hypertension have not equally suffered. There are many problems about arteriosclerosis that must be solved before the future can answer this question.

Arteriosclerosis is a term that has established itself in medical circles to denote what may be a number of different pathologic processes that have in common thickening and degeneration of the arterial walls. Degeneration of the medial coat in old age with necrosis and calcification, commonly called Monckeberg's sclerosis, is seen in the peripheral arteries. This process seldom occurs in the brain but has been described in the larger vessels of the basal ganglions by Spielmeyer.<sup>1</sup>

The most common type of degeneration of the larger arteries is atherosclerosis characterized by intimal thickening which undergoes degeneration with deposition of fatty substances, and to a much less degree thickening and sclerosis of the media. Splitting of the elastic fibers with hyaline and mucoid degeneration of the connective tissue and eventual calcification complete the picture. The

\*Read before Golden Belt and Central Kansas Medical Societies, January 4, 1951.

\*\*From The Department of Neurology, University of Kansas School of Medicine.

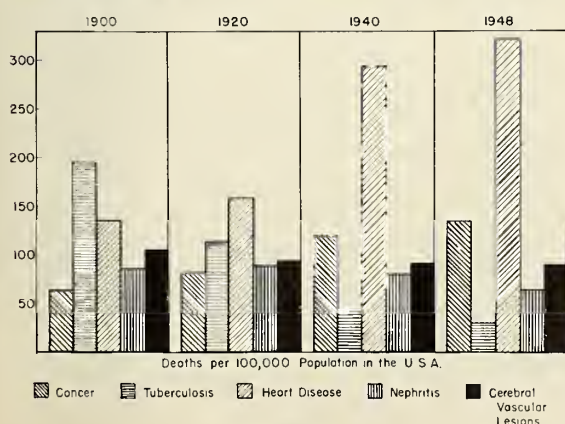


Figure 1

pathologic change in the smaller arteries and arterioles is of a different character. It consists of thickening of the vessel wall with narrowing in diameter of the lumen. The intima undergoes hyalinization and there is hypertrophy and collagenous degeneration of the media. These two major types of arterial disease vary widely in degree and distribution in different cases, and there may be no parallelism between the degree of arteriosclerosis and functional disturbance.

It has been emphasized by Scott<sup>2</sup> that arteriosclerosis of the larger arteries, commonly seen in elderly people, may give rise to cerebrovascular accidents by occlusion or rupture without any evidence of hypertension. Stenosis or occlusion of the coronary arteries may also occur in such individuals, but renal insufficiency is rare. On the other hand, hypertension and cardiac hypertrophy is associated with sclerosis of the arterioles. Arteriosclerosis of the larger arteries is often combined with this process.

The relationship of arteriosclerosis to hypertension is still an unexplained problem, yet this relationship is important in the study of the cerebrovascular accident. Autopsy studies show that atherosclerosis and arteriolar sclerosis occur together in both hypertensive and non-hypertensive individuals. One is sometimes surprised to see extensive atherosclerosis of the arteries at the base of the brain in relatively young hypertensives. Thrombotic softening in the brain may be found when a cerebral hemorrhage is expected. Conversely, in advanced age hemorrhage may be found in the brain when thrombosis is anticipated.

Moritz and Oldt<sup>3</sup> studied the arterioles in hypertensive and non-hypertensive individuals. They state that there are three views advanced to explain chronic hypertension: 1. That renal disease is primary; 2. that renal disease is a part of a diffuse primary vascular disease; and 3. that hypertension is primary and the renal and vascular changes are secondary to it. It is well known that essential hypertension commonly precedes evidence of renal failure, but it is not certain whether chronic hypertension precedes vascular disease that leads to renal atrophy. The experimental work of Goldblatt<sup>4</sup> directed attention to the relationship of renal ischemia to the pathogenesis of hypertension.

Moritz and Oldt<sup>3</sup> compared the degree and incidence of arteriolar sclerosis in various organs in 100 hypertensive and 100 non-hypertensive individuals. It is significant that the arterioles in the kidney were sclerotic in 97 per cent of the hypertensive cases but in only 12 per cent of the non-hypertensive cases. It has been assumed that chronic hypertension

may be the result of primary renal arteriolar sclerosis, either by reflex spasm of peripheral vessels initiated by the ischemic kidney or by retention or elaboration of pressor substances produced by reduced blood flow through the kidney.

Another theory postulates that chronic hypertension may be due to primary arteriolar sclerosis with narrowing of the vessel lumens which produces increased resistance to blood flow. A third theory presupposes that the arterioles are in a state of spasm, thus producing intravascular pressure which leads to degeneration in the arterioles of the kidney and other organs, and that this change in turn increases the severity of the hypertension. The fact that hypertension occurs in some instances without evidence of arteriolar sclerosis in the vessels of the kidney has led to the speculation that the ischemic brain, as well as the ischemic kidney, may elaborate a pressor substance, or by some other mechanism, produce hypertension. For example, hypertension has been produced in dogs by ligation of the cerebral arteries (Nowak and Walker,<sup>5</sup> Fishback, Dutra and MacCamy<sup>6</sup>). The role that the hypothalamus may play in this mechanism is unknown.

Emotional tension and anxiety are believed by many to be a factor in the production of hypertension. The overflow of emotional stimuli into sympathetic stimulating autonomic centers could represent a neural pathway capable of increasing blood pressure, but it is doubtful if this factor alone can explain chronic hypertension in so far as every physician has seen chronic neurotic patients who have persistent anxiety and autonomic excitement for years, yet are quite free of hypertension. The type of arteriosclerosis known as atherosclerosis seems to be associated with a metabolic disturbance, particularly a disturbance in fat metabolism. This has been stressed by Leary.<sup>7</sup> The relationship of this process in man to experimental arteriosclerosis has recently been studied by Altschul.<sup>8</sup>

Despite the gaps in our knowledge regarding basic causes of hypertension and arteriosclerosis, the diagnosis of the cerebrovascular accident presents many practical problems to the clinician. The first to be considered is whether a stroke the patient has just had has followed embolism, thrombosis, or hemorrhage. This is particularly important if one considers that the type of treatment used in cerebral thrombosis may be injurious to a patient with cerebral hemorrhage.

*Cerebral Embolism.* Embolism can be suspected when a stroke occurs suddenly without premonitory symptoms in a patient who is known to have an acute or subacute bacterial endocarditis, auricular fibrillation, or intracardiac thrombosis, destructive



lesions in the lung, and disease of the aortic wall, capable of releasing thrombotic masses or clots. Once an embolus has lodged in a cerebral artery the symptomatology is similar to that of cerebral thrombosis.

*Cerebral Thrombosis.* Thrombosis is dependent on disease of the vessel wall, atheromatosis, arteritis, syphilis, or infective state, changes in the coagulability of the blood, cardiac weakness, or low blood pressure, especially in old age. After thrombosis occurs ischemia of the tissues, supplied by the thrombosed vessel, produces nerve cell death, tissue edema, and eventual encephalomalacia. The role that vascular spasm plays as a primary or secondary process is an unsettled and argumentative problem. The symptomatology depends on the degree and site of the lesion, the degree of edema and amount of collateral circulation. Cerebral thrombosis in rare instances occurs from compression of an arterial trunk by a brain tumor, during pregnancy, in exanthems and fevers, and during anesthesia. Steegmann and Feil<sup>9</sup> reported two cases of hemiplegia following cardiac standstill.

Thrombosis occurs most frequently in the middle cerebral artery or its sylvian branches. It occurs only one-third as often in the posterior cerebral artery, and the lowest incidence occurs in the anterior cerebral artery. In the middle cerebral artery, the sylvian branches are involved in about half of the cases, the deep branches that penetrate to the striatal nuclei in about 30 per cent and the remainder of the cases are mixed. Occlusion of the basilar and cerebellar arteries is rare.

Cerebral thrombosis, unlike cerebral embolism, is preceded by premonitory symptoms. Among these are headache, which is frequently localized, vertigo, transient periods of mental confusion, paresthesias or weakness. Convulsions occasionally precede the paralytic signs. Unconsciousness occurs when the area of the brain involved by thrombosis is large. Progression of signs and symptoms may also be evident in individual cases. Goodman<sup>10</sup> has recently emphasized that recurrent thromboses in hypertensive patients may lead to cerebral symptoms, particularly mental disturbances, and this may overshadow any evidence of renal or cardiac damage. Mental confusion also occurs in hypertensive crises which are followed by cerebral edema.

*Cerebral Hemorrhage.* Hemorrhage into the meninges, brain substance, or ventricles can occur singly or in combination by the rupture of a cerebral artery of large or small caliber. Hemorrhage and softening of the brain following extensive thrombosis of the venous dural sinuses will not be considered here.

That condition has been accurately described by Courville.<sup>11</sup>

The most common cause of hemorrhage into the leptomeninges is rupture of an intracranial aneurysm which commonly occurs in the arteries making up the circle of Willis at the base of the brain. This produces a spontaneous subarachnoid hemorrhage, characterized clinically by meningitic symptoms, especially stupor, rigid neck, fever, and grossly bloody cerebrospinal fluid. The aneurysm is congenital, almost invariably in young patients, but may be of arteriosclerotic origin later in life. In individual cases, the lesion is of syphilitic or infective origin. Focal neurologic signs, such as ocular paralysis or other cranial nerve palsies, or more rarely, motor weakness of one or more extremities, precede the symptom of rupture. Severe headache, or pain in the eye on one side of the head, may be complained of just before unconsciousness or stupor. Many of these lesions can now be visualized, if suspected before rupture, by the use of intracranial arteriography.

Hemorrhage into the brain substance has been recorded in almost any part of the brain. It extends and ruptures into the ventricular system, or leptomeninges, in a high percentage of cases. The cause of arterial rupture in cerebral hemorrhage has been a battleground of theory and argument since Charcot and Bouchard in 1868 advanced the idea that miliary aneurysms occur in the cerebral arteries in certain locations and their rupture gives rise to cerebral hemorrhage.

Rosenblath (1918) attempted to explain hemorrhage around cerebral arteries by assuming that there was primary injury to the surrounding brain tissue by the action of tissue ferments. Westphal and Bär thought that spasm of the artery was followed by hemorrhage in the ischemic changed brain tissue. Ricker maintained that cerebral hemorrhage in smaller branches of the vascular tree depends upon a functional circulatory disturbance in which stasis and finally diapedesis of red blood cells around small arteries follow paralysis of vasomotor nerves. Schwartz accepted this view and explained large cerebral hemorrhages by the flowing together of these small hemorrhages. These theories have been reviewed by Bauman.<sup>12</sup>

Beitzke<sup>13</sup> has applied a technique of embedding the clot of the cerebral hemorrhage in one piece and sectioning serially. He has been able to confirm Charcot and Bouchards' original view: that the hemorrhage arises from the rupture of a miliary aneurysm in the artery. This is usually brought about by an increase in blood pressure and by the fact that

the surrounding brain tissue is very soft as compared to the tissue of the kidney or other organs. The aneurysm is formed by local injury of the intima and elastica interna. Arteriosclerosis and syphilis are factors in individual cases. Cerebral hemorrhage may occur as a late complication of head injury, probably as the results of traumatic injury to the blood vessel wall.

The differential diagnosis between cerebral hemorrhage and cerebral thrombosis has been analyzed by Webster<sup>14</sup> and by Aring and Merritt.<sup>15</sup> In general, their conclusions agree. These studies indicate that cerebral hemorrhage is more sudden in onset, immediate unconsciousness being twice as common as in thrombosis. It occurs at a relatively younger age in patients who have a higher mean systolic and diastolic blood pressure level. It is preceded more often by severe headache, vomiting and convulsions. Nuchal rigidity, variations in respiration, and progression of symptoms are more frequent in cerebral hemorrhage. An initial leukocytosis and increased cerebrospinal fluid pressure are found more often in hemorrhage cases. A very important diagnostic sign is the presence of blood in the spinal fluid. This occurs in about 75 per cent of the cases of cerebral hemorrhage. There is no blood in the spinal fluid in over 95 per cent of the thrombosis cases. *In the absence of choking of the optic discs, it is inexcusable to omit the spinal puncture as a diagnostic aid in cerebrovascular accidents.*

The prognosis is much more grave in cerebral hemorrhage. Of Webster's 126 cases, two-thirds died within a week and nine-tenths within a month. In cases of encephalomalacia only one-tenth died within a week and one-third in a month. Aring and Merritt studied 245 cases. They reported death from cerebral hemorrhage in 50 per cent within four days. In thrombosis, death occurred in 28 per cent within four days.

There are two types of cerebral hemorrhage, both almost invariably fatal, that deserve special mention. The first of these is primary pontile hemorrhage. I<sup>16</sup> found in an analysis of 17 cases a disturbance in respiration in every case and respiratory failure in about 65 per cent. Slow gasping respiration, pinpoint pupils, and grossly bloody spinal fluid are useful diagnostic signs. Death occurred within three to ten hours in 11 of the 17 cases.

The second condition, intraventricular cerebral hemorrhage, cannot be differentiated in most cases from primary pontile hemorrhage. Hemorrhage into the brain substance may precede ventricular rupture, in which case signs of paralysis may be present before the stupor of ventricular rupture begins. After ventricular hemorrhage, there is sudden deep

coma, bilateral loss of muscular power, flaccidity or occasionally rigidity and grossly bloody spinal fluid. Some patients have convulsions, usually on the side opposite the ventricle that is filled with blood, or, if bilateral, opposite to the ventricle most distended with blood.

It is beyond the scope of this paper to consider all of the focal signs of brain injury found in cerebral hemorrhage and thrombosis. Although paralysis of one or more extremities may be the most obvious manifestation, it is important to search for defects in the visual fields, change in sensation, or coordination, and if the patient is right handed and has a right sided paralysis, aphasic disturbances. Lesions in silent areas, multiple lesions and lesions of a diffuse character, give rise to psychotic behavior.

*Treatment.* The treatment of a cerebrovascular accident must be approached as an individual problem. It is an advantage to be familiar with the symptoms and condition of the patient preceding a stroke, an advantage the family doctor may have over the specialist. We cannot be certain, but it seems probable that weight reduction, particularly in hypertension, avoidance of strain and excitement and a more leisurely life may delay, if not prevent, a stroke in some cases. Certainly cardiac reserve, kidney sufficiency, and the average level of the blood pressure are important considerations in treatment. Many arteriosclerotic patients seem to live more happily and comfortably when treated with regular doses of caffeine, phenobarbital, and nicotinic acid, or other vasodilators.

*Cerebral Hemorrhage.* Once the diagnosis of a cerebral hemorrhage has been made, good nursing care is essential. The posture should be changed frequently, the linen kept clean, and suction must be used to keep the airways open and secretions out of the throat. The nasal tube may be indispensable to administer fluids, drugs, and food in stuporous patients. Therapy is directed towards attempting to reduce intracranial bleeding, keeping the blood pressure and intracranial pressure under control, and supporting cardiac function. In some cases in which the blood pressure is very high, venesection may lessen the strain on the heart. Neurosurgical removal of a subcortical clot has been a life saving measure in some instances. The use of the oxygen tent and hypertonic glucose, or sucrose, to reduce the intracranial pressure helps support the cerebral circulation and protect uninjured nerve cells.

In subarachnoid hemorrhage spinal drainage was formerly widely used. We have abandoned this practice in recent years, and the spinal fluid apparently becomes free of red blood cells and becomes xanthochromic just as rapidly as it did with



spinal drainage. Recurrence of bleeding in spontaneous subarachnoid hemorrhage is a serious complication and is frequently seen in fatal cases.

Pneumonia, urinary infection, and other complications may be avoided, or combatted, by the use of antibiotic drugs which may tide the patient over the critical period to the convalescent stage. Continuous catheter drainage during the stage of urinary incontinence is valuable, just as it is in spinal cord injuries and infections. After the acute stage sedatives may be used, but opiates should not be used in cerebral hemorrhage. Proper consideration of fluid and electrolyte balance is essential. The use of rutin alone, or combined with ascorbic acid, has been advocated to reduce intracranial bleeding, but it is probably of no value.

*Cerebral Embolism and Thrombosis.* In these conditions the problem of therapy is vastly different. Focal ischemia, which follows occlusion of blood flow, causes rapid injury to the nerve cells, and therapy is concerned with the attempt to restore and maintain the cerebral circulation, particularly in the viable zone surrounding the area of complete ischemia. It has been shown that the nerve cells of the cerebral cortex, striatum, and pallidum cannot survive complete anoxia for a period of over five minutes without undergoing irreversible degeneration. In cerebral thrombosis and embolism, complete ischemia occurs in only a fraction of the area supplied by a given artery. The peripheral areas are protected by collateral circulation of adjacent vessels. Further damage may take place by secondary edema, stasis, and the effect of accumulated metabolites in the ischemic tissues. Nerve cells represent a high metabolic tissue that not only requires an abundance of oxygen but must depend on the glucose in the circulating blood for energy since the cells themselves do not store glycogen.

The shock reaction of a stroke may lower the systemic blood pressure which has been shown by Cobb<sup>17</sup> to be one of the principal factors in maintaining the cerebral circulation. The arteries of the brain are more resistant to change in caliber than vessels in other parts of the body (Loman and Myerson<sup>18</sup>). Stimulation of the cervical sympathetic nerve fibers produces ten times the vasoconstriction in the arteries of the skin than it does in those of the pia mater. Carbon dioxide is the most effective vasodilator of the cerebral vessels. Vasodilatation of the cerebral arteries seems to depend more on chemical stimuli than upon neural mechanisms. The intrinsic control of the blood vessels of the brain seems to depend upon tonic dilatation rather than constriction, and the former is mediated by chemical rather than neural stimuli. Histamine and nicotinic

acid are widely used as vasodilators but both of these drugs, although strong extracranial vasodilators, have irregular or relatively mild influence on the intracranial circulation.

Schmidt<sup>19</sup> in a comprehensive study of the cerebral circulation asserts that the vasomotor nerves influence the extracranial vessels much more than the intracranial vessels. He states that evidence is against the concept of cerebral angiospasm from sympathetic impulses, yet vasospasm is still widely accepted as a cause of cerebral circulatory disturbance.

Vasospasm following disease or injury to the arterial wall may occur and may not depend on stimulation of sympathetic impulses from a more remote site. Vasoconstriction can be produced by decreased carbon dioxide and a high oxygen (85-100 per cent) level. Alkaline agents, increased carbon dioxide (5-7 per cent) and decreased oxygen tension (10 per cent) produce vasodilatation. Epinephrine given systemically will increase the cerebral blood flow, dilate the cerebral vessels and increase any tendency to hemorrhage. Histamine increases extracranial blood flow but decreases intracranial flow. Aminophylline, another widely used drug, decreases the cerebral blood flow. Most of the drugs have hardly any vasoconstrictor effect on the cerebral arteries, but vasoconstriction is constantly found in arterial hypertension.

Hyperventilation occurs in strokes from disturbance of the respiratory mechanisms. This tends to decrease the blood flow, but inhalation of high oxygen concentration will do the same thing. Insulin will increase the cerebral blood flow and decrease oxygen consumption. Increased intracranial pressure increases cerebral vascular resistance and decreases cerebral blood flow and oxygen consumption.

Schmidt states that patients with hypertensive vascular disease who have normal cerebral function show normal values for cerebral blood flow and oxygen consumption but they have increased cerebral vascular resistance. In such patients, blocking of sympathetic impulses by various techniques decreased cerebral vascular resistance with the exception of stellate ganglion sympathetic block. This procedure failed to decrease the vascular resistance of the cerebral vessels and failed to increase the cerebral blood flow. In patients with hypertensive vascular disease who had mental deterioration there was a decrease of both cerebral blood flow and oxygen consumption. This can probably be explained by fixed anatomical changes in the cerebral arteries, which would limit the effectiveness of drugs used therapeutically.

A consideration of all of these factors should warn

us of the importance of case selection in attempting to scientifically appraise the value of any type of treatment. Certainly elderly patients with advanced arteriosclerosis, or hypertension of many years duration, or patients with advanced renal or cardiac complications, can expect only some palliation of their symptoms by the most sagacious medical management.

There have been a number of reports<sup>20, 21, 22, 23, 24, 25, 26</sup> indicating favorable results in arterial hypertension following splanchnicectomy and thoracolumbar sympathectomy. Case selection is important for success of these operative procedures. The writers referred to above advise the operation on patients who are not over 50 to 55 years of age, who have normal cerebral function, who have no evidence of cardiac decompensation or severe kidney damage, and who do not have severe retinal arteriosclerosis. A preceding cerebrovascular accident is not considered a contraindication. The patient should, of course, be informed of unfavorable changes that may be produced by the operations, for example, sexual impotence and fatigability.

It has been shown that the absence of retinal arteriosclerosis does not necessarily indicate that the cerebral arteries are free of arteriosclerosis. Alpers, Forster, and Herbut,<sup>27</sup> by careful histologic studies, demonstrated that retinal arteriosclerosis only indicates that the basilar artery may be arteriosclerotic, but gives no indication of the state of arteries and arterioles in the meninges, cerebral cortex and basal ganglions. They found that retinal arteriosclerosis occurs in combination with cerebral arteriosclerosis six times as frequently as it occurs without sclerosis of the cerebral vessels, but the latter occurs as frequently in the absence as it does in the presence of retinal arteriosclerosis.

Stellate ganglion sympathetic block has been used in the treatment of cerebral embolism and thrombosis in recent years. Among a number of reports may be mentioned those of Naffziger and Adams,<sup>28</sup> Searles and Nowill,<sup>29</sup> Scheinberg,<sup>30</sup> and deTakats and Graupner.<sup>31</sup> Scheinberg studied the cerebral blood flow before and after stellate ganglion block and found no appreciable change in blood flow. deTakats and Graupner admit theoretical objections to the value of the procedure, but report that daily stellate ganglion block improved 41 out of 50 cases treated. In view of the fact that they used oxygen, hypertonic sucrose, or concentrated albumin, aminophylline, and anticoagulants, and in view of the general difficulty encountered in clinically evaluating the exact site and extent of softening or the relative collateral circulation in a given case of thrombosis, it would appear to me difficult to evaluate the effect

of this single procedure. On the other hand, the theoretical objections to the procedure, on the basis of its failure to increase blood flow in the brain, should not be taken as absolute proof.

We do not know what effect there might be on a lesion by simply opening up the peripheral cranial vessels. The reports of improvement of old cases of thrombosis, weeks or months after the insult by stellate block, are as fantastic as they are pathologically unsound. It is well known that many hemiplegics recover to a surprising degree with ordinary treatment. It is also well known that mental motivation and suggestion may greatly influence the clinical status of individual patients. More evidence on carefully selected and controlled cases is needed before proof of the value of stellate ganglion block can be considered a certainty. A comparative study of results of a large series of cases treated with good medical management, or with stellate block alone, would be of real value.

I am convinced that a large percentage of patients who have strokes do not get the best medical management. The patient with a cerebral hemorrhage is going to suffer from shock and cerebral tissue injury, and his fate will be determined by the site and degree of hemorrhage regardless of the treatment employed. The type of treatment described above must be carried on vigorously until survival of the initial effect is accomplished.

In patients with thrombosis, the same initial procedures as described in the treatment of cerebral hemorrhage are employed, and early ambulation, muscle re-education, and exercise will restore many to useful lives. Before the ambulant stage, contractures of muscles and fibrous ankylosis of the joints of the paralyzed limbs can be prevented by daily passive motion, stretching, and massage. The prognosis, in general, is better in patients with encephalomalacia, but the site and extent of the lesion will determine the outcome. Medical treatment aims towards maintaining good circulation in as much of the ischemic tissue as possible.

The choice of drugs used is usually influenced more by the personal experience of a given physician than by proved scientific principles, and indeed, the proof of the value of a given therapeutic agent is often impossible. This will always be true in a problem presenting so many unknown and variable factors. I, personally, prefer the use of caffeine and ephedrine in patients who are not hypertensive, or in those whose blood pressure has fallen following a stroke. In hypertensive patients, and those with cerebral hemorrhage, I prefer to use aminophylline, because of its general action on the heart and circulation, and hypertonic glucose, or



sucrose, as a 10 per cent solution by intravenous drip. This will tend to prevent the increase of systolic pressure that occurs in increased intracranial pressure. The use of anticoagulants to prevent extension of intravascular clotting in vascular occlusion may promote hemorrhage in dilated capillaries in thrombotic softening and this danger may outweigh any advantage. Reese and Kant<sup>32</sup> recommend aminophylline in doses of 0.1 to 0.2 grams, four times a day, in arteriosclerotic patients with hypertension, especially if they are confused or agitated. They believe the drug has a safe and satisfactory sedative effect superior to barbiturates.

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93rd Annual Session

KANSAS MEDICAL SOCIETY

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# Cardiac Arrest with Successful Resuscitation

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The incidence of death on the operating table is on the decrease in selective surgery, due mainly to four factors: (1) better pre-operative preparation of the patient in which the nutritive condition, body chemistry, fluid balance and electrolytes are carefully evaluated; (2) use of whole blood transfusions or acceptable intravenous substitutes to replace loss in blood volume and its components during surgery; (3) the great improvements made in anesthesia; and (4) the increase generally in the technical skill and knowledge of the surgeons, especially with regard to cardiac resuscitation.

Respiratory failure on the operating table can usually be handled successfully by the anesthesiologist by endotracheal intubation and establishment of forced ventilation through a closed system with 100 per cent oxygen until the underlying condition corrects itself or is treated accordingly. However, this is successful only if adequate circulation is maintained by the heart, and if this becomes embarrassed due to cardiac arrest or standstill, then the surgeon must re-establish the circulation by the surest and quickest method at his command, namely, cardiac massage. The following case report is illustrative.

## Case Report

Mrs. S. B., white, age 20, was admitted to Wesley Hospital for selective cesarean section April 6, 1951; her estimated date of delivery was April 11, 1951. Past history revealed a previous pregnancy that was successfully carried to term, but was still-born after a difficult and protracted labor with high forceps being used. The patient's prenatal course with this, her second pregnancy, had been uneventful. Ten days prior to admission x-ray pelvimetry had shown a generally contracted pelvis with gross cephalopelvic disproportion, and a test of labor contraindicated. The remainder of the past history was otherwise negative, there having been no previous surgery or anesthesia.

Pre-operative medication consisted of nembural, grains three, the night before; atropin sulfate, grains 1/100 \*<sup>1</sup> given 30 minutes before surgery. Spinal anesthetic consisting of 14 mgm. pontocaine in two cc. spinal fluid was given in the fourth lumbar interspace with the patient in the sitting position. Patient was immediately placed in Trendelenburg position with the head elevated on three pillows.

\*<sup>1</sup> No immediate preoperative sedation of patient with barbitol or narcotic drug was given in order to avoid possible depressant effect on the fetal respiratory center. The patient had a calm, stable emotional system and was not in any way apprehensive as she entered surgery.

After one and one-half minutes, she suddenly became unconscious, respiration immediately ceased, no pulse could be detected at the wrist or neck, pupils were dilated and cyanosis developed. Forced ventilation with 100 per cent oxygen by intermittent pressure on oxygen bag was carried out for two minutes, during which time auscultation of the heart revealed no heart sounds; 0.5 cc. of epinephrine was then injected into the heart muscle\*<sup>2</sup> with no results. About two and one-half minutes had passed and the condition of the patient was more grave.

The skin of the abdomen was hastily wiped with an antiseptic and the scalpel secured. A single incisional sweep was made from the xiphoid process to two inches above the umbilicus. This one incision carried through the skin, fascia and peritoneum with one stroke and nicked the serosa of the stomach as well.\*<sup>3</sup> There was no bleeding from the wound edges. The liver was pushed posteriorly, the stomach moved to one side and the tip of the scalpel was then pushed through the diaphragm carefully in the midline (there is a sulcus or mild indentation present to help determine the midline) about one and one-half to two inches below the level of the skin. As the pericardium is fused to the diaphragm along this area, I was in pericardial cavity and a moderate amount of fluid escaped. The diaphragmatic incision was lengthened just enough to permit me to introduce my hand; the heart was found to be small, firm and in systolic arrest. On the first contact with my hand the heart quickly relaxed, gave two contractions and arrested itself again; after three or four seconds I again put my hand on it and, again, the same relaxation occurred, followed by two or three rapid contractions with another arrest. After another pause of three or four counts, I firmly seized the heart and started to squeeze or massage it and, after several massages, the heart suddenly gave a couple of irregular contractions and then established a rapid rate of approximately 160 beats per minute.\*<sup>4</sup>

As the circulation became re-established and

\*<sup>2</sup> Although the epinephrine was injected with a long needle into the fourth interspace next to the sternum, no blood could be obtained because there was practically no cardiac cavity as a result of the systolic arrest, hence, the reason for injection into the heart muscle itself. At this time I believe it appropriate to state that I agree with other writers who generally conclude that this procedure is but a method of procrastination in an emergency of this kind and can only serve to delay definite surgery at the cost of precious seconds.

\*<sup>3</sup> The stomach was greatly distended with oxygen as a result of the positive pressure being applied during the artificial respiration. Before the final closure of the abdomen, the gas was evenly distributed throughout the intestinal tract.



bleeders appeared, these were clamped. After an interval of one minute it was felt that the cardiac crisis was under control, an acceptable pulse being palpable at the wrist, and that the fetus should now be secured as rapidly as possible. Hence, another incision was made in the lower abdomen and a classical section performed with delivery of a cyanosed infant which responded satisfactorily after a few minutes of oxygen.

The uterine wall and lower abdominal incisions were repaired in a routine manner. Then, fresh gowns and gloves were donned, fresh antiseptic was applied to the upper abdominal incision and the patient was draped for the first time. The diaphragm and the pericardial sac were closed as one layer with six interrupted sutures of heavy chromic. The serosa nick on the anterior of the stomach repaired, the incision was closed in layers with no drains. At the close of surgery the blood pressure was 120 systolic and 80 diastolic, pulse 120 per minute but regular, and the post-operative condition fair.

#### Postoperative Course

The patient's postoperative course was stormy for the first three days and after that, rapid improvement was made. Sutures were removed from both incisions on the seventh day and the patient was sent home ambulatory with the baby on the eighth postoperative day. Nasal oxygen, blood transfusions, Levine suction and massive penicillin therapy played their part. EKG and chest x-ray showed no significant changes in the heart other than a mild loss of tone with slight decompensation which occurred on the second day and responded rapidly to small doses of puredigin. A severe pericardial friction rub appeared on the third and fourth days and then subsided.

The most remarkable factor about the postoperative course—and this indicates that some brain damage of transitory nature had occurred—was the absolute inability of the patient to apprehend pain. Not once during the postoperative course did she complain of any pain or discomfort even with two abdominal incisions, nasal oxygen by catheter, Levine tube, colon tube and intravenous infusions all going at the same time. Repeated questioning by the nurses and myself could not get her to admit to any pain or discomfort. A month later, in my office, she readily admitted pain from the needle when given a vitamin injection.

\*4 The total time from the occurrence of the arrest to the establishment of cardiac contractions is estimated to be three minutes and was spent as follows: two minutes of artificial respiration, 30 seconds waiting to see if the cardiac injection of adrenalin was going to work, 15 seconds to make the upper abdominal incision, incise diaphragm and enter pericardial cavity and 15 to 20 seconds to establish cardiac contractions.

#### Discussion

Quite a few reports are present in the literature<sup>1,2,3</sup> dealing with the topic of cardiac arrest and its management when present as an operative crisis. By far, the majority of these have occurred during the operation when either the chest or abdomen had already been opened. If occurring during an open thoracotomy, the approach to the heart presents little difficulty; if occurring when the abdomen is open, then the operator must attempt to massage the heart against the sternum by pressing the diaphragm against it with the hand. Not more than 30 seconds should be spent in this method<sup>4</sup> and then, if by that time no contractions are present the diaphragm must be incised as described above and direct cardiac massage started. If the surgeon is working through a lower abdominal incision, as in a pelvic procedure, it would be better to make a separate high abdominal incision in order to approach the diaphragm rather than extend the previous incision clear to the xiphoid process as must be done in order to gain adequate exposure of the diaphragm.

Only a few cases have been reported, however, in which the cardiac arrest occurred before the beginning of surgery and was treated with successful outcome. Here one must choose between the abdominal approach or the thoracic approach. For the general surgeon not experienced in thoracic surgery and often working in smaller communities where open-drop ether, spinal or intravenous anesthesia are the rule and no facilities for endotracheal anesthesia are immediately available, the abdominal approach has much to commend it, both by the rapidity and ease with which it can be done and because the general surgeon will be operating in a more familiar field. Furthermore, the presence of a pneumothorax, as would necessarily be induced by the thoracic approach, without endotracheal anesthesia is to be avoided if at all possible, as the resultant embarrassment of pulmonary ventilation due to collapse of the lung adds to crisis already present.

The mechanism by which sudden cardiac arrest with respiratory failure occurs during the administration of the anesthesia, be it spinal, regional, intravenous or inhalatory, is a matter of conjecture but probably represents an anaphylactic reaction by a hypersensitive individual.<sup>5</sup> Most cases reported have been cleared of the stigma of faulty administration of the anesthesia and cannot be laid to any dereliction on the part of the anesthesiologist. As in this case, the dosage, administration, and technique are above criticism.

The question as to how long cardiac massage should be continued is a matter of conjecture; it

appears that in some cases an hour is not too long.<sup>4</sup> During this time such auxiliary measures as injection of a weak solution of epinephrine (0.5 cc. of a 1:1000 in five cc. of saline solution) into the auricle may be of value.

Complete cardiac arrest that persists more than three minutes is usually fatal, and if the patient recovers after this length of time, some permanent brain tissue damage is usually manifest. The preceding statement, while dogmatic, is a good one to govern one's actions by and to estimate the time remaining to do what must be done if the patient is to recover successfully. Wolff,<sup>4</sup> in an excellent paper reviewing the literature, reports a case of cardiac arrest occurring before surgery was started, in which a complete recovery was made after six minutes of cardiac arrest, using the abdominal approach. This case of Wolff serves only to emphasize the exception to the rule of three minutes. In estimating the time of arrest, it is terminated by the time that active cardiac massage is begun—not when the heart begins its own voluntary con-

tractions again. It has been shown that a systolic blood pressure of 60 mm. mercury can be effected by cardiac massage.<sup>4</sup> The success of any method depends upon speed, and the surgeon must be psychologically prepared for such an emergency by having given the matter much previous thought. A decision must be made quickly and converted unhesitatingly into action.

#### Summary

A case of cardiac arrest occurring before the start of surgery is reported in a case scheduled for delivery by section, with successful cardiac resuscitation within three minutes and the subsequent delivery of a live infant by section immediately afterwards.

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## Diverticulitis of the Sigmoid as a Surgical Problem\*

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Diverticulosis of the colon is not an uncommon condition. Diverticula, consisting of the mucosal pouches which protrude through the muscularis, have been reported to be present in approximately 10 per cent of the people over 40 years of age. Obesity and constipation are known to be important contributing factors in this condition. The sigmoid contains diverticula in 75 per cent of the cases, and the incidence becomes progressively less nearer the cecum; consequently, it is the sigmoid from which most surgical complications arise.

Rankin and Brown<sup>1</sup> state that roentgenologic incidence of diverticulitis was present in 25.1 per cent of 2,400 cases having diverticulosis. There are probably many mild cases of diverticulitis which are never diagnosed. Therefore, it would be difficult to state what percentage comes under surgical care. It is known, however, that the sigmoid is the most common site of carcinoma, exclusive of the rectum, in the colon. Rankin and Brown<sup>1</sup> found diverticula, associated with cancers, in only four of 679 carcinomata of the bowel. This was an incidence of 0.6 per cent. Cancer associated with diverticulitis was found in four of 227 cases. This was an in-

cidence of 1.8 per cent. Hemorrhage in diverticulitis is encountered in only about 10 per cent of the cases, whereas bleeding is one of the most frequent signs of malignancy in the colon.

Most cases of diverticulitis may be treated medically; however, complications must be handled surgically. It is a treacherous disease with many diversified complications, therefore a surgical procedure must be devised for each individual case.

Every surgical procedure must be devised around two points: first, a procedure to carry the patient over the acute phase, whether it is the drainage of an abscess, the closure of a perforated diverticula, or a defunctioning colostomy; second, the care of any complications that may be present and the prevention of further recurrences of this serious condition.

It is difficult to classify the surgical complications of diverticulitis. However, with some overlapping, four clinical pathological groups may be listed in regard to surgical treatment. First, the group with localized, non-perforated diverticulitis with a history of lower abdominal pain, low-grade temperature, slight distention, and all subacute symptoms which subside within a period of three or four days. These symptoms recur at intervals.

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Second, the acutely ill patient following a perforation with general peritonitis or localized abscess, all of which is in the absence of complete intestinal obstruction. Third, the acutely ill patient, following a perforation, with complete obstruction of the bowel, most commonly of the sigmoid colon. Fourth, those cases with a long history of chronic leakage and subacute inflammation which involves a localized area of the colon, with invasion of the adjacent bladder or the small bowel, often resulting in fistula formation.

Four case histories have been selected that are fairly representative of the above groups.

Case 1. A 55-year-old obese white female was admitted to the hospital on September 13, 1949. Multiple diverticula of the sigmoid had been found four years previously, through barium studies. Her family physician gave the history of having seen the patient on several occasions, and each time she was suffering with what he thought to be diverticulitis. Her symptoms during these attacks were pain in the lower left quadrant associated with some fever and chills. These symptoms would last for three or four days, but would subside with chemotherapy and antibiotics. There was no bleeding from the bowel. However, between attacks she gave fairly consistent complaints of flatulence, constipation, and tenderness with low-grade pain in the lower left abdominal area. Proctoscopic examination revealed no evidence of malignancy. All other examinations were essentially negative. After preparation of the bowel with enemas and chemotherapy, the patient was taken to surgery.

The abdomen was explored through a left rectus incision and was found to be normal, except for several hard and inflamed diverticula of the sigmoid flexure. Since the bowel had been previously prepared, a resection was done with a primary anastomosis of the sigmoid. The procedure was similar to that done in resecting a carcinoma of that area, except for the amount of meso-sigmoid removed. After the anastomosis was completed, a soft rubber rectal tube was inserted through the rectum and was carefully guided past the anastomosis to the splenic flexure. This tube acted as a splint for the anastomosis and for decompression of the colon.

The patient's convalescence was uneventful, and she was discharged from the hospital 14 days after her admission.

This represents a case of known diverticulosis, with diverticulitis for the past two years. The operating of this case may have been questioned; however, it is fairly certain to say that this woman would eventually have had serious complications. With modern chemotherapy and antibiotics, this type of operation does not represent too great a hazard.

Hospitalization and expenses are at a minimum where a primary anastomosis may be done. The use of the rectal tube for decompression alleviates the necessity of a temporary colostomy. This certainly is the ideal case of diverticulitis to operate and care for.

Case 2. A 70-year-old male was admitted to the hospital on October 10, 1949. He gave a history of being ill at home for a period of four days prior to admission. His chief complaint was pain and tenderness over the lower abdomen. This complaint had become progressively worse the past two days and was associated with chills and fever. He also gave a history of frequency and dysuria. He had vomited water twice the day before admission to the hospital. His treatment had consisted of a soda enema which did not relieve distress, but he expelled lots of flatus.

On examination this patient was found to be acutely ill. His temperature was 101.2 degrees F., pulse 110, W.B.C. 20,000, with the differential showing a shift to the left. Urine examination was essentially negative. His abdomen was moderately distended, with acute tenderness and rigidity over the lower and left side. Bowel sounds were absent. Rectal examination revealed what was thought to be a mass in the lower abdomen. X-rays gave no indication of obstruction. Because of the physical findings, this patient was explored.

Through a left rectus incision an acute inflammatory abscess was encountered, which arose from what was thought to be a perforated diverticulum of the sigmoid. Penrose drains were inserted in the abscess area. Solutions of penicillin and streptomycin were distributed in the abdomen. A loop colostomy was brought out at the upper margin of the incision. His convalescence was fairly rough; however, with the use of suction, antibiotics, blood and fluids the patient recovered. The colostomy was functioning well when he was released from the hospital 17 days following his admission.

Barium studies done in one month revealed numerous diverticula of the sigmoid. Proctoscopic examination proved negative for evidence of malignancy. About this time he began having some myocardial difficulty, so any further resection of the sigmoid was not deemed advisable. Five months following his operation the colostomy was closed, using local anesthesia. This man was placed on medical management and to this date has been free of any severe recurrence of this disease.

Smithwick<sup>3</sup> states that approximately 25 per cent of the patients who are treated with colostomy alone will have further trouble. However, in this case at the age of 70 and in the presence of a heart condition, further resection was felt to be too hazardous.

Case 3. A 58-year-old male was admitted to the hospital on July 2, 1948. Twenty years previously he had had a gastroenterostomy for duodenal ulcer. Other than some constipation and vague lower abdominal pains, he had been well since. Four days prior to admission he had developed severe lower left abdominal pain and tenderness. His pain and tenderness became more excruciating, associated with chills and fever. He vomited once, and also complained of frequency and dysuria and inability to expel gas.

On examination at the hospital his temperature was 101.4 F., pulse 90, W.B.C. 18,200 and R.B.C. 4,000,000. His abdomen was quite distended with increased rigidity and tenderness over the left side and lower abdomen. Rectal examination confirmed the findings of a mass at about finger tip. X-ray of the abdomen revealed a distended colon with some air in the small bowel. Findings were fairly evident of an inflammatory mass with large bowel obstruction in the sigmoid area. Etiology was undetermined, other than that a perforation had taken place.

The patient was taken to surgery and a defunctioning colostomy in the right transverse colon was done as advocated by Devine, thus completely diverting the fecal stream. A hard inflammatory mass was felt in the lower abdomen but was not broken down at this time. After a rather stormy course under intensive treatment by antibiotics, blood and gastric suction, he recovered. In one month barium studies were made of the non-functioning colon, revealing the typical step ladder appearance of barium filled diverticula. Proctoscopic examination failed to reveal any evidence of malignancy.

In March, 1949, nine months from his first admission, the patient was again hospitalized and operated upon. Through a left rectus incision the involved portion of the sigmoid was resected, making a primary anastomosis. Very few adhesions or mechanical difficulty were encountered, in view of such an inflammatory processes nine months previously. The patient's recovery was uneventful. Two weeks following this resection, a Devine spur clamp was applied to the previous colostomy. As frequently follows this type colostomy, a ventral hernia was present at the site which required surgical repair several months later.

Morton<sup>2</sup> makes the statement that treatment calls for good judgment and patience on the part of the physician and the patient. How true in this particular case, as the expense incurred aside from time off work is tremendous. However, the fact that he is living and well to date justifies a safe prolonged procedure.

Case 4. This patient, a 63-year-old male, was

admitted to the hospital on September 28, 1949. He gave a history of being ill at intervals for the past 10 years with vague intermittent abdominal pain, flatulence and constipation. At no time had he vomited or noticed blood in his stools, nor had he had any recent weight loss. One week prior to this admission he became ill at home with intermittent abdominal pains centered around the umbilicus, anorexia, pyrexia of 101 degrees F., and dysuria. His family physician gave him penicillin and kidney medicine and advised enemas. Because of his continued pain, some vomiting and the poor results from the enemas, he was referred for treatment and hospitalization.

His temperature was 100.4 degrees F., W.B.C. 15,200, and there was some rigidity of the lower abdomen with point tenderness to the right and below the umbilicus. The following day, after treatment with penicillin, his temperature was normal, abdomen flat and no masses were felt, but he still had tenderness below and to the right of the umbilicus.

After three days of normal temperature it was assumed that this was a subsiding appendicitis. The patient was taken to surgery, and through a right rectus incision an extensive old and recent inflammatory reaction was found with no free pus. A mass the size of a lemon was present in a localized area of the sigmoid. This sigmoidal mass was firmly attached to the bladder and surrounding small bowel by old inflammatory adhesions. A frozen section of large nodes in the mesentery proved to be inflammatory. The sigmoid was carefully mobilized from the bladder and bowel so the sigmoidal mass could be exteriorized by the Mikulicz procedure, forming a double barreled colostomy through a small left rectus incision. The pathological examination of the resected sigmoid revealed an acute diverticulitis with focal peritonitis. His convalescence was a little rough but no serious complications arose, so on the eighth postoperative day a spur clamp was placed on the colostomy. On October 15, 1949, the patient was discharged from the hospital. Six weeks later, under local anesthesia, the colostomy was completely closed. To date he has been free of difficulty.

The time of this operation was no doubt poorly selected. However, once the abdomen is opened, something must be done. Establishing a proximal colostomy would have been safe with future resection and primary anastomosis. However, that is time-consuming and expensive, whereas the Mikulicz procedure was just as satisfactory for this type case. It would have been only a short time before a fistula formation into either the bladder or the bowel would have been present.



### Discussion of Treatment

It is feasible to assume that with the general use of antibiotics and chemotherapy, more cases of interval diverticulitis should be operated upon. Early operation would prevent more of the serious complications, such as fistula formation to the bladder, etc. With adequate bowel preparation during a quiescent period of localized diverticulitis, it would then be possible to do a resection with a primary anastomosis as was done in Case 1. Mortality and morbidity should be relatively low in this properly selected group.

Perforated diverticulum with either localized abscess formation or general peritonitis requires at least drainage, as these people are acutely ill. Because simple drainage is frequently followed by a fecal fistula and subsequent recurrence of the diverticulitis, a defunctioning colostomy is advocated. Smithwick<sup>3</sup> states that operations which neither divert the fecal stream nor remove the involved segment of the bowel were unsatisfactory in over 40 per cent of the cases.

A preliminary defunctioning colostomy is necessary in cases complicated by obstruction or fistula. Establishing a colostomy should precede resection of the involved area by at least six months or a year. A colostomy as advocated by Devine is satisfactory, as this procedure completely diverts the fecal stream.

In those cases where a localized area of the bowel is involved by subacute inflammatory processes, an exteriorization Mikulicz procedure of the involved area is advantageous. These cases are usually found by accident, most commonly confused with appendicitis or gynecologic complaints. The bowel has not been previously prepared by chemotherapy, so a primary anastomosis is not advisable. Formation of a colostomy only necessitates another operation. The use of antibiotics intra-abdominally and

parenterally will make the Mikulicz procedure a much more common operation for selected cases.

### Summary

1. Four cases of diverticulitis have been presented, each patient being treated with a different surgical procedure thought to be advantageous for that particular case.

2. The advancements in antibiotics and chemotherapy now make resection with primary anastomosis possible. Primary anastomosis is restricted to those cases of interval localized diverticulitis which are in the quiescent phase.

3. Colostomy with or without drainage, in which the involved segment of bowel is not removed, has further recurrences in many incidences. However, this procedure may be advisable in the presence of other systemic complications.

4. A defunctioning colostomy is mandatory in the presence of obstruction or fistula. A waiting period of six months to a year before resection of the involved bowel is advisable.

5. The Mikulicz exteriorizing procedure is advisable where inflammation is localized to the bowel and in the absence of an abscess. The employment of this procedure may be extended with the use of intra-abdominal and parenteral antibiotics. The duration of hospitalization is much shorter than when colostomy is done prior to resection.

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## Fourth Annual

## MID-WEST CANCER CONFERENCE

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# Psychosomatic Problems of the Involutional Period

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The involutional period, also known as mid-life, or middle age, is the age period from 40 to 60. Prior to this, most people have more or less comfortably invested most of their interests in their work, in their family ties, and in personal achievement. Middle age brings the first awareness to them that all this cannot always go on. The prospect of progressively declining capacities for work, and of less and less opportunity for achieving the goals they have envisioned begins to become apparent.

Awareness of the problem may begin with a hint of the threat of retirement or an illness that actually forces retirement. Often, just at this time, children, in whom much feeling may be invested, grow up and leave the family circle to make homes of their own. For these and other reasons, the realization dawns on most people at this time that they have reached and are passing their peak of efficiency and productiveness. The fortunate ones are those who have developed interests outside their work, satisfying social relationships, and who have the ability to accept calmly the necessity for readjustment, and for changing their way of living. Those who have not these assets and who therefore become frightened at the prospect of losing those things most important to them become ill at this time.

Grinker states that middle age is not fixed, but that somewhere between the ages of 40 and 60, some individuals become old very quickly, while others remain in the prime of mental and physical efficiency. The readjustment or compromise between goals and capacities for achievement that is required in most people at this age is difficult. Some people then react to this problem by denying that anything at all is happening to them. They may often attempt to return to the aggressive and sexual pursuits of younger days. Some well established and hitherto apparently satisfying marriages break up at this time. The picture of the middle aged man pursuing the young girl is so well known that the age of 40 to 60 has been called "the age of indiscretion."

Another reaction in the face of beginning involution is a retreat from these problems and stresses into old age. Of these people it has been said, "Old age is a frame of mind," and Grinker adds, "of the weary and unsuccessful." He states that a person who wishes to decrease his activities because of a sense of failure often retreats into the attitude of

old age. When this happens the person seems to age physically quite rapidly.

A third course in the face of the stresses of the involutional period is the development of involutional melancholia, or depression of middle life. Still another is the development of somatic symptoms.

Among the psychosomatic syndromes of importance in middle life are:

1. *Diabetes of middle age:* Diabetes in middle years seems to be directly related to obesity. The altered ability to handle carbohydrates is not due to an endocrine disturbance in the oxidation of glucose, but is due to over-eating. There are people who have tremendous needs for sources of love, many of whom manage to find them. However, in the middle years, there is often a real diminution in the sources of love, affection, or approbation from persons in the environment. As has often been pointed out, love is as much a human need as are vitamins. One of the commonest ways of substituting for fancied or real diminished sources of love and affection is over-eating. The syndrome of the unloved person who eats a great deal is called bulimia, and is well known. The patient who has too high an intake of carbohydrates develops what might be called oral diabetes.

The treatment of this disorder should include better control of the diet. However, it is not possible to control such a patient's diet as long as the patient's feelings of being unloved remain. The physician, therefore, should also attempt to help the patient reorder his life so as to give him more opportunity for friendly relationships. In order to do this, it is necessary, of course, to be familiar with community resources. The physician should see such a patient regularly and can be an important source of affection for the patient himself. He should inquire in a friendly way after the patient's progress, certainly not restricting himself to whether the patient has kept to his diet or not. One should never lecture the patient as to the necessity for remaining on his diet, but rather inquire warmly and interestedly about the patient's success in maintaining the diet, and about his general well-being. The patient should be encouraged to increase his scope of activities that bring him in contact with other people.

2. *Coronary Insufficiency and Anginal Syndrome:* Twenty per cent of the heart disease mortality in the age group of 50 to 59 is due to acute

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coronary occlusion. It is at this age, when increases in tension or acute emotional upsets frequently occur, that the neurotic patient with organic heart disease is most likely to suffer a cardiac breakdown. Many patients who have always had difficulty in expressing angry feelings begin at this time to develop anginal pains. It is well known that several years of anginal pains frequently precede an acute coronary occlusion.

Dunbar's studies have led her to believe that patients with coronary artery disease are primarily people who have been aggressive and dominating, who have also had difficulty with authorities, and who have the need to surpass or subdue superiors. They have for the most part been responsible, hard-working people, with few interests outside their work, and people who take authority and do not share responsibility. They generally have little interest in sports and few hobbies. These are the patients who most often are frightened at the prospect of reaching the down-hill half of life. The fear of being dependent on other people, and of no longer being able to accomplish what they had been able to until this time elicits tremendous anger, as well as fear, that they cannot express. They are also, too often, in the position of having no other fields to which to turn their interest and in which they can satisfy themselves with achievement. The dangerous age for these people is from 45 to 55.

One study conducted on patients with already existing coronary artery disease showed that the fewest coronary accidents occur in those who were able to do the following:

1. Make a daily sustained moderate physical effort.
2. Balance their food intake and energy output so that they were neither over-eating nor under-eating.
3. "Practice the hygiene of a quiet mind."
4. Sleep eight hours a night.

I am not certain what these authors mean by "Practice the hygiene of a quiet mind," but it does seem obvious that if we can help the patient with coronary artery disease by giving him support in meeting his daily problems through sympathetic listening or even at times by helping him make difficult decisions, we can certainly help him to have a "quieter" life. The suggestions about physical effort, food intake, and sleep are excellent ones.

One might summarize this by saying that the physician should help the patient with coronary artery disease to establish better physical and mental hygiene practice. Here, too, it is important to attempt to interest the patient in hobbies and in fields of activity in which he can do a gratifyingly successful job. To order complete retirement for

such a patient is unwise. It is, unfortunately, too frequent that the physician strongly advises the middle-aged patient with coronary artery disease to retire. It has been a common observation that death follows soon after, sometimes in a very few months.

3. *Hypertension:* Eleven per cent of people between the ages of 45 and 54 have hypertension, and approximately 25 per cent of all deaths over the age of 50 are caused by essential hypertension. According to Dunbar, hypertensive patients are socially shy people who feel chronic rage, but who have learned to get along with other people by showing a surface of apparent self-control and reserve. They have a marked conflict between the desire to be active and self-sufficient and the desire to be passive and dependent.

As is well known, no therapy has been found adequate for the treatment of essential hypertension. Both surgical and medical procedures have failed to give lasting results. Psychotherapy cannot succeed in returning the blood pressure to normal levels in people who have had the disease for years as patients in the involutional group most often have. The observation has been made that hypertensive patients frequently die soon after they have to go to the hospital. However, hospitalization can be very valuable, if it means a short period of being cared for in a quiet hospital, surrounded by a calm and cheerful staff. These patients should not be told a long time in advance of tests or examinations that are going to be done, or they will get very upset. Doctors' rounds, particularly when several doctors make rounds together and discuss cases at the bedside, tend to upset them. The patient's physician should see the patient alone and in a quietly cheerful and friendly way. He should be free with reassurance and willing to answer questions.

We are all aware of the marked degree of tension that these patients have, and so, often, they are advised to "relax." This advice to relax is very frequently taken as a command by these patients and carried out in a very tense way. I have in mind a patient whom I saw some six years ago, whose blood pressure was very high, something like 240/140. It was felt that the prognosis was poor. In a very naïve way I gave this patient the earnest advice that he must relax. The following day a colleague and I were making rounds and we found the patient more tense than he had ever been before. He was almost shaking. When we asked him what the trouble was he said, through clenched teeth, "The doctor says I've got to relax, I've got to relax, I *must* relax."

When hypertensive patients want to talk about their many grievances, and they feel many, the good clinician listens and does not tell the patient that he must not think of such things.

4. *Rheumatism*: Rheumatic pains in the muscles or joints are grouped together under the term rheumatism, which includes joint disease and muscle pains with or without changes in structure. Halliday has done some excellent studies on this group of patients. He feels that independent, upright, and conscientious people, with a high sense of duty, are most prone to rheumatism. As he sees it, they are rigid, stiff, and touchy people and they become ill with the rigidity, stiffness, and touchiness of rheumatism. He noted that some external traumatic event often precedes the onset of symptoms. These patients are sometimes seen with severe arthritic pain, plus anxiety, tremulousness, and frequently some degree of depression. They can't seem to relax. Halliday has also described a middle-age triad of peptic ulcer, rheumatism, and bronchitis.

When one gets to know these patients, one often finds that they feel misunderstood by people around them, and that they have quite conscious fears of approaching old age. I believe that it is necessary to see such patients at regular intervals and to give them sufficient time with the physician to talk about their feelings of fear and depression. The physician, himself, in being friendly and keeping regular contact with this patient, is frequently the best possible treatment.

5. *Peptic Ulcer*: There is a group of people who have excessive needs to be cared for but whose self-respect forces them to deny this and to over-compensate for it by being independent. They often maintain themselves successfully for many years. This denial and over-compensation tends to break down in middle years. The expression of the need may then be, by way of the autonomic nervous system, in the upper gastro-intestinal tract. In a manner of speaking, the needs are being expressed in dyspepsia and later peptic ulcer. However, the personal care that they wish to have is now acceptable to them.

Grinker calls this the "Wall Street Disease," in that it occurs so frequently in driving and aggressive business men on reaching middle age. He pointed out that the wounds to the self-esteem and the reality stresses of the middle years make it difficult for these people to maintain their defenses as they have for so many years. Medical therapy of the peptic ulcer is obviously the first element in the treatment. This alone, however, is not enough. The primary psychological task is to give the patient attention, both at home and from the physician, and in a subtle way that does not conflict with his inability to recognize or accept this need.

6. *Flight into Old Age*: The weary and defeated give up and become old. They suffer many pains, feel useless and discouraged, and often seem to want

to die. Many may even develop the physical signs of advancing arteriosclerosis and senile changes, but this is sometimes reversible. These patients must be enticed into fields of interest. It is often valuable to help them make acquaintances of people of the same age, who can share interests with them, but who have not this feeling of defeat. It is important that these patients be made to feel that they are able to accomplish something worth while, and this is frequently handled by encouragement to make such attempts, and reassurance that they are doing something. Sometimes through consultation with the family of such patients their external situations can be manipulated so as to give some opportunity for these satisfactions.

7. *Involucional Depressions*: Many of the somatic complaints and symptoms of the middle-aged are really the somatic symptoms of involucional depression or melancholia. This may apply to easy fatigue, lack of energy, constipation, and morbid fears and preoccupations. The fact that the patient is depressed may be overlooked by the physician while he tries to treat the physical symptoms. The symptoms of a depression are well known to all and include the change of mood, the retardation, both psychological and motor, as well as self-accusatory thoughts, and in patients of this age group, very often, pronounced sexual guilt. As soon as the physician becomes aware of the fact that the patient is suffering from an involucional melancholia, he should refer the patient to a psychiatrist. Treatment of the depression of middle life, when instituted early enough, gives a very favorable prognosis. With the disappearance of the depression, the somatic symptoms will disappear too.

8. *The Dementias of Middle Life*: The ages of 40 to 60 bring the organic so-called pre-senile dementias, which are not strictly psychosomatic in the sense we have been using. Alzheimer's disease and Pick's disease, the dementia of Huntington's chorea, and the primary cerebellar atrophies are very likely to occur in this period. Excellent descriptions of these syndromes are to be found in all standard textbooks of neurology. In the middle 50's arteriosclerotic dementias sometimes begin, also. Agitation, memory defects, and deterioration of personal habits should make one wary of these syndromes.

#### General Treatment Considerations

Weiss and English, in their book on *Psychosomatic Medicine*, mention the importance of the personality of the physician himself in the treatment of psychosomatic illness. In their words, the physician who is to be successful in the diagnosis and treatment of the psychosomatic syndromes must have a real interest in human beings, as well as in



human disease. To a certain extent he must be able to identify himself with the emotional pain from which his patient suffers.

It is not possible to work successfully with these patients if it is necessary for one to get quick results. The physician who does not encourage the patient to remain in his care if the patient does not get well quickly, in a sense is sending the patient to someone who will take care of his problems. They may, however, get to the wrong person—to a quack or an unscrupulous cultist. The physician, then, who knows that he has not the patience to work with these more chronic, slow responding problems, should see to it himself that the patient gets to someone who can competently take care of him.

One should, of course, never brush these patients off as being neurotic old people who really have nothing wrong with them. For one thing, they do certainly have something wrong with them and they need the physician very much. There is another thing—a careful examination and medical study may reveal organic pathology which can be easily cleared up, or which may require hospitalization or the services of a neurologist.

Having done a careful physical study, and having satisfied oneself as to what sort of pathology exists and to what extent, one should then cease dwelling on the physical side of the picture. Excessive dwelling on physical symptoms and unnecessary repetition of laboratory examinations, as has been pointed out many times, tend to "fix" the symptoms and the preoccupation with the possibility of a physical disease to a point where frequently it is impossible to convince the patient that he is not seriously physically ill.

It may often help, after one has the confidence of the patient, to explain earnestly and frankly, without making it sound somehow shameful, that the patient has emotional problems which contribute to, or cause many of his symptoms.

English lists some means of therapy at the command of the general practitioner. These are:

1. Giving examples of how a physiological condition can be caused by an emotional state. Excellent examples of this are the physical concomitants of fear.

2. Analogies can be used to illustrate how emotional tension can, through the nervous system, affect organ function.

3. Patients can be re-educated as to better ways of achieving normal gratifications, that is, ways of having satisfying relationships with other people.

4. Giving the patient an opportunity to speak about his problems in a warm and understanding atmosphere helps to desensitize the patient to his problems.

5. It is important to give the patient encouragement and approval freely.

6. Follow-up interest is extremely important. One should encourage patients to return at intervals in order to discuss their current status. This can be an important means of continuing the emotional elements necessary to help them maintain psychological balance.

### Conclusion

The realization in middle age of the fact that they have reached and are passing the peak of efficiency and productiveness, and that with but few exceptions the rest of the route is downhill, brings many people to the physician with depression, anxiety, and psychosomatic illness. The fortunate ones are those who have developed interests outside their work, satisfying social relationships, and the ability to accept calmly the necessity of readjustment. The most favored few are those who, for reasons we do not understand, need not face this problem at all. To those who have not these assets and are frightened at the prospect of diminishing vigor, this period of involution brings pain and illness. Drugs and manipulations alone will not help them; their human needs require attention, too.

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### CHANGE OF ADDRESS

Please notify the Kansas Medical Society of any changes in address.

Help keep the mailing list up to date.

## PRESIDENT'S PAGE

Dear Doctor:

I wish to report that we have been diligently pursuing an answer to our rather huge and most bizarre problem of finding an over-all solution; which of course must be compatible with the State Welfare Board, the Kansas Hospital Association, the Pharmaceutical Association and those providing medical and surgical service to the indigent. I am proud and happy to advise that each and every participant mentioned above is fully cognizant of the magnitude of this deeper than apparent social problem! I personally solicit from each and every county your continued patience for a short while, for soon I shall provide you with some startling and amazing facts!

The program for the circuit postgraduate course is now completed and has been in your hands nearly a month. Please permit me to urge your consideration and in the final analysis, your enrollment. I would also urge your recognition of the fact that this excellent postgraduate course is sponsored by your Society, your State Board of Health, and your State School of Medicine—it cannot fail!

It is most gratifying and very stimulating to note the acute interest in society problems shown by many chairmen and their respective committees having early meetings and thereby forming their plans early in order to accomplish the maximum during the coming months. Please accept my congratulations!

I am of the opinion I can speak for each of you in saying to Dwight Lawson, Sam Barham and their assistants—Thanks for a job superbly done on the "Physicians' Manual." I wonder how many of us are putting in a portion of time in behalf of the society that is so nobly represented in the issuance of this excellent preparation?

Very truly yours,

A handwritten signature in cursive script, reading "C. H. Benage". The signature is written in dark ink and is positioned at the bottom right of the page, below the typed name "Very truly yours,".



## EDITORIAL COMMENT

### Traffic Safety

Perhaps you know it already—that the 68 Kansas fatalities in August is the largest toll for any one month in the history of this state—that 387 persons were killed by vehicles in Kansas this year up to September 15, which promises to make this a record high—that nationally 37,800 traffic deaths are expected this year, or 3,000 more than ever before—that 980,000 Americans have lost their lives in traffic deaths since 1900.

Perhaps you know that the Kansas Medical Society is cooperating in a Kansas Conference for Traffic Safety Education, where every possible means of reducing this death toll is being explored. A heartening interest is being shown in driver education classes for young people and adults. Safety films are being presented all over the state. Many organizations are sponsoring safety as principal projects and the man-to-man agreements are increasing in popularity.

These, in case you do not know, are voluntary agreements between father and son that each will respect the car for the power it has, each will obey the laws and use courtesy while driving. Similar pledges are available for father and daughter compacts. While such agreements have no legal status they can be effective exactly to the degree that both parties respect and abide by the principles involved.

You know of course of many vagaries within the law that might be corrected, the farce that lies within the driver's license law, the lack of enforcement of regulations that are in effect. You can point to the need of wider, straighter four-lane highways, special truck routes, compulsory liability insurance and many other things that would correct one or another of the myriad present day problems. All these are being studied and worked at from many sources, but these are primarily on the negative side of the question.

The great and abiding problem remains the driver himself, and on that hazard the medical profession and education have a profound dual responsibility.

You know it is human, not mechanical failure that causes most accidents. Dr. Bryon Stockey described it this way. "The most difficult problem in the campaign for safety is neither the road nor the car. It is the human element. Roads can be rebuilt; new principles of car design can be adopted; but the driver's nervous system cannot be made over . . . His reactions within certain limits are fixed. Yet, he too must be controlled."

It is physically impossible for the medical profession to periodically re-examine every driver, nor

is the physician at liberty to notify law enforcement officers of patients considered unfit to operate a motor vehicle. Even if both were possible, it would probably bring about as much harm as good.

There are some things that the individual physician can do. The effectiveness of the medical profession's contribution to this field will just about total whatever interest is shown by the individual. Many possibilities are open, but these few ideas may present other possibilities.

The individual physician can endorse and lead in the public acceptance of safe driving principles. He may materially aid the effectiveness of local driver education courses by offering to address the students on why he advocates safety. He may work toward the passage and enforcement of sound vehicle control laws.

But there is also something more he may do. He may advise his patient on the hazards of driving. Many operators are unaware that their physical, mental or emotional disturbances create danger to themselves and others. Some just do not care.

You and you alone are qualified to judge the nature of his illness and how this might affect his driving. If it is his eyes, you know the extent of his handicap. If it involves his reflexes, you are aware of that problem. If you could convince this large body of persons of the risk they take while operating a vehicle, you could make a tremendous contribution in the solution of this problem.

Yes, it takes time and effort on your part, but it would represent one of the great public services that are open to the medical profession. You have the knowledge to solve this problem and the opportunity. You alone are in this peculiar position, and upon your willingness to accept this challenge rests to considerable degree the prospects of reducing the annual traffic toll in Kansas.

### Socialized Medicine in Scotland

Mr. R. C. McCormick, manager of the Broadview Hotel in Wichita, recently visited Scotland and England. He wrote the following article on socialized medicine for the *Wichita Beacon*. It is reprinted here with permission from the author.

"Elie, Fife, Scotland.—Socialized medicine was a new experience to me.

"During a golf game I had taken a clumsy swing at a ball and put a severe stitch in my back muscles. I spent a restless and painful night.

"The next day we were to drive to Edinburgh. I had my host call the family doctor and make an ap-

pointment to give me a shot to relieve the pain. It was early morning, before office hours, so there was no delay.

"I called at the doctor's home and the shot was administered. The reply was 'nothing, the socialist government is paying for it.'

"Not only that, he handed me a prescription headed 'National Health Service (Scotland). Executive Council for County of Fife.' He explained that it was a form of analgesic balm shipped over from America, which was exceptionally good for such cases. Just stop at any pharmacy and present the slip. The government would be glad to give it to me.

"He then went on to say that he would be pleased to write me an order for a wig or a set of false teeth if I felt inclined to have either or both. Again, they were 'free.' The government would 'give' them to me. I was a guest of the British government and during my stay, the government felt obligated to keep me in good health.

"I wanted to ask him if he could give me a prescription for a good, juicy 10-ounce steak and a quart of fresh orange juice. Both are very healthful.

"I was frankly puzzled with the whole procedure. I had contributed nothing during my stay in Scotland. I was at a loss to understand how a free wig would help my health.

"Later when I found that the government was soaking the working man five shillings for a five-pound salary and then taking another five shillings from the employer, I wondered why I wasn't offered a beautiful nurse to rub my brow and to accompany me on the balance of my trip. There was enough money coming in for such generosity. Where was it all going? I should settle for a wig!

"Relating this to American dollars. A man with a \$14-a-week salary pays 67 cents a week and his boss pays 67 cents a week for 'free' health service. The total is almost 10 per cent of the man's salary. Take 10 per cent of your current monthly salary, put that figure up against \$6.00 a month, the approximate cost of Blue Cross and Blue Shield for you and your family in America. The \$6.00 a month is freedom. Ten per cent of your salary is socialism. Take the difference between the two figures and multiply by 60,000,000—the number of workers in America. The result is the waste of socialism.

"For example, say you make \$250 a month. You and your employer would contribute \$25 a month to health under socialism. Twenty-five dollars, less \$6.00, is \$19. Nineteen dollars times 60,000,000 is \$1,140,000,000 waste.

"This is a very conservative example. The national health service of Britain puts out NO figures on cost. It has been fairly estimated that the British

government is putting up \$3,000,000,000 over and above its outrageous tax on each worker to carry on 'free' health.

"Sooner or later we will be educated to the point where we all realize that God, in His infinite wisdom, created the world so that nothing is 'free'—not even freedom. We must work for everything we have.

"These politicians who say to us, 'I can fix it so that the government will do it for you,' work upon our ignorance and greed. They fly in the face of creation. As long as they remain in power due to our willingness to believe them, they are a living monument to our stupidity and selfishness. Nothing on this fair earth ever has or even will be 'for free.' When you get 'something for nothing,' you either have paid for it, or it is nothing."

### What Is Federal Aid?

"What Is Federal Aid?" was the subject of an editorial that appeared recently in *Nebraska Agriculture*, official publication of the Nebraska Farm Bureau Federation. The definition and the editorial follow:

"Federal aid is a temporary expedient that was offered to state and local governments by idealistic bureaucrats at a time when state and local governments lacked the courage to face and meet squarely their own problems of administration. It is a delusion that has gained permanency because state and local governments have not had the courage to make an effort to solve the problems created by the depression years of the thirties and the war economy that followed. Federal aid has always carried with it the idea that it costs no one anything; it is just money that the federal government gives states and local governments out of the goodness of its heart. Don't you believe it.

"You and I and all the other American taxpayers pay dearly for federal aid. Every dime of federal aid is paid for in higher taxes, higher costs of automobiles, higher costs of foodstuffs and everything farmers and consumers buy, because taxes are a big item in the costs of production of this nation. . . . As a matter of fact, federal aid is the most expensive solution to problems faced by state and local governments, because taxpayers have to pay the costs of bureaucratic idealists who tell the states and local governments what share they shall have of the tax funds available and how they shall administer it."

Now is the time to make reservations for the 93rd annual session of the Kansas Medical Society. The meeting will be held in Kansas City, Kansas, April 27-May 1, 1952.



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## SOCIALIZED MEDICINE

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*This is the 23rd of a series of articles dealing with federal compulsory health insurance. They are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.*

### Socialized Medicine in Great Britain

The following release, distributed by the Committee for Constitutional Government, Inc., was written by Cecil Palmer, English publisher, author and journalist, who is one of the most vocal and highly respected opponents of socialism in Great Britain today.

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For more than three years, the British people have endured socialized medicine. Supposedly intended to provide a first-class national health service, the scheme was politically conceived and is rapidly becoming politically administered. It failed to fulfill its promises and obligations because politics and medicine do not mix. The art of healing has nothing in common with the craft and craftiness of vote-catching.

In its evolution from private practice to state control, the profession of medicine is losing its independence, integrity and indispensable privacy in the relationship between physician and patient. A lay bureaucracy impinges itself on medicine. The profession is cluttered with orders, rules and regulations. It is overwhelmed in an avalanche of forms, questionnaires and certificates which reduce doctors to impotence and patients to despair.

For some years, the American public has been invited to accept politically-planned and controlled medicine because, among other things, it is claimed that such a system is imperative to overcome a potential shortage of doctors. But nationalized medicine has not solved the problem of too few doctors in Britain. On the contrary, some of the best men and women in the profession steadfastly refuse to associate themselves with the scheme. Others who gave it a fair trial are deserting it, by premature retirement, seeking other employment, or by emigrating and requalifying for service abroad where the ethics of private medical practice still prevail.

One well-known doctor said upon giving up practice, "I cannot cope with the situation. To make an adequate living, you must have so many patients you can't look after them properly. What worried me most was not being able to prescribe what I thought was good for my patients. Instead, we are supplied with a list of what we are permitted to

prescribe, and I found myself thinking not what is good for a patient but whether a particular prescription is on the list. That is bad medicine."

Broadly speaking, there are not enough doctors, nurses, hospitals or clinics to service the Service efficiently. The maximum panel of patients allotted to one doctor is 4,000 and the minimum is 2,500. The average time available to the doctor for both diagnosis and treatment under nationalized medicine is from three to five minutes per patient!

The first estimate of the cost of this so-called "free" medical service was \$500 million a year. Despite the fact that patients now make part payments for dentures and spectacles, nationalized medicine now costs British taxpayers roughly \$1,960 million a year, an increase of nearly 300 per cent since 1948. Of this expenditure, only \$143 million reaches general medical practitioners. When nationalized medicine was inaugurated their per capita fee was a fraction more than five cents a patient, and this scale still applies today when bare living costs have advanced.

According to the Auditor General, Sir Frank Tribe, (and he should know) nationalized medicine has produced a swollen, expensive bureaucracy of non-professional "administrators." He points out that "of the total hospital expenditure, 9.9 per cent goes in doctors' salaries, 23.8 per cent for nurses, and 26.5 per cent represents salaries and wages of 'other officers and employees' including administrative staffs."

Large sections of the British public have become "bottle-and-pill" conscious. We are extending and fostering a brand of petty hypochondria, hitherto the almost exclusive prerogative of the self-pitying few who imagine that they enjoy being ill. The very sick are herded with the very slick and must wait their turn. The old, the dying and the desperately ill are forced by circumstances beyond the control of either doctors or patients to enter a competitive struggle with their relatively healthier rivals.

There are tragically long waiting lists for admission to hospitals. The number is officially admitted to be more than 500,000. There are also at least 10,000 serious tuberculosis victims awaiting admission to sanatoria. At the same time, there are thousands of empty beds because the available professional personnel cannot cope with the demand for its skilled services.

It is not surprising, therefore, that the Association of Municipal Corporations, representing local government in contradistinction to national government, strongly criticized hospital administration. Appalled by weighty evidence of waste in nationalized hospitals, the association declared that "the direct accountability of the local authorities to the

electorate for the expenditure they incur is more likely to conduce economy than the present system."

The blunt truth is that nationalized medicine is facing a financial crisis. Over-burdened British taxpayers now realize that they are paying far too much for far too little. Doctors and patients alike are bewildered and viciously frustrated. They are in temporary bondage to the totalitarians. It is possible that all concerned are waking up to Herbert Spencer's classic generalization that "the ultimate result of shielding folk from folly is to fill the world with fools."

The British people are not fools and cannot be fooled by knaves and so-called "do-gooders" indefinitely. The pregnant point at issue is not free medicine, which is a palpable lie, but *freedom in medicine* which is an eternal, fundamental truth. Nationalized medicine is operative socialism; and socialism begins in the benevolent tyranny of the Welfare State and inevitably reaches its climax in the malevolent, tyrannical Serf State.

#### Conference on Heart Disease

A conference on heart disease, to which all physicians in the state are invited, will be held on Thursday, November 15, at Winter VA Hospital, Topeka, under the sponsorship of the Committee on Study of Heart Disease of the Kansas Medical Society. There will be no matriculation fee.

The conference will begin at 10:00 a.m. and will be continued through the afternoon. Luncheon will be served at the hospital.

Dr. Edward Massie of St. Louis, associate professor of clinical medicine at Washington University and a member of the staff of Barnes Hospital, will be principal speaker. The program will be as follows:

The Care of the Pregnant Cardiac—Mahlon H. Delp, M.D., University of Kansas Medical Center, Kansas City.

Electrocardiography and Congenital Heart Disease—Ned W. Smull, M.D., University of Kansas Medical Center, Kansas City.

Case of Mitral Stenosis with Autopsy—Robert T. Cotton, M.D., Winter VA Hospital, Topeka.

Problems in Congestive Heart Failure—Edward Massie, M.D., St. Louis.

Thirty-Minute Question and Answer Period.

Some Metabolic Aspects of Coronary Heart Disease—Richard R. Howard, M.D., Winfield.

Psychosomatic Case Report—Paul W. Yost, M.D., Winter VA Hospital, Topeka.

Studies on Pheochromocytoma—Newman V. Treger, M.D., Topeka.

Case of Malignant Hypertension with Autopsy—Samuel Zelman, M.D., Winter VA Hospital, Topeka.

The Use of a Temporary Polythene Shunt to Permit Resection and Replacement of Vital Vessel Segments with Homologous Frozen Grafts—Paul W. Schafer, M.D., University of Kansas Medical Center, Kansas City.

The Committee on the Study of Heart Disease sponsors two courses each year. The first is a three-day course held in Emporia during October, designed to interest those physicians who have had advanced graduate study in heart disease and a considerable portion of whose practice relates itself to that specialty. The second conference, for which the program is given above, is designed for all doctors of medicine interested in the subject of heart disease. Previous conferences have been well received, and the committee hopes that a great many physicians will attend so that this year's program will be of even greater value than those which have preceded it.

#### Study on Typhoid Inoculation

A study on the effect of typhoid inoculation of women in the child bearing age is now being conducted in the Kansas City area, and information from physicians in other flooded areas of Kansas is urgently requested. A follow-up study on fetal anomalies, to be conducted in about eight months, is also planned.

Data for the study is being collected by Dr. Roy Busenbark, 224 Brotherhood Block, Kansas City, Kansas, who will furnish blanks for reports. Kansas physicians who gave inoculations to women in the age group being studied are asked to supply the information requested.

#### Accuracy in Laboratory Diagnosis

A promise of greater accuracy in laboratory diagnosis results from a service announced recently by the College of American Pathologists. The group is initiating a program which will enable pathologists who direct laboratories to obtain highly standardized chemical solutions for use in performing tests on body fluids.

Distribution of standardized dextrose and nitrogen solutions to 1450 member pathologists began August 30. By checking solutions prepared by their own technicians against the standard solutions, directors of laboratories can thereby increase the reliability of their medical tests.

This program is the initial step in the development of a comprehensive plan for standardization of laboratory procedures, the College announces.



# Case Report from the University of Kansas Medical Center Clinical Pathological Conference

## Myocardial Infarction—Embolic Coronary Occlusion

Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, psychiatry and neurology, roentgenology, and the junior and senior classes of medical students.

### Case Presentation

A. W., a 48-year-old colored female, was admitted April 30, 1951, and expired on May 1, 1951. One hour after admission, while lying in bed, she developed severe pain in the chest with radiation to the neck and both arms. Within a few minutes she became comatose and was brought to the emergency room.

Physical examination showed a well developed, well nourished colored female who was comatose. The skin was cold, moist, and markedly cyanotic, and the extremities were mottled. The pupils were pinpoint in size. Respiration was shallow and rapid. No radial pulse or blood pressure could be obtained. The heart rate was 72 per minute and there was a gallop rhythm present with a grade III systolic murmur at the apex. Moist rales were heard in both bases. The liver was palpable four finger breadths below the right costal margin and was smooth. There was two plus pitting edema of the legs.

Past history revealed a two month illness at age 13 years characterized by fever and swollen tender joints. A similar illness occurred at age 22. A positive serologic test for syphilis was discovered at age 32, following which she received a course of bismuth and arsenic for over a 10-year period. The serology was negative thereafter. At age 32 she was seen with lower left abdominal pain and excessive menses. Pelvic examination revealed a tender, left tubo-ovarian mass thought to be inflammatory. At age 34 she complained of dyspnea, vertigo, and hemoptysis.

During her 44th year she incurred two cerebrovascular accidents with residual paresis of the left arm from the first and partial paresis of the right arm and leg and a moderate speech defect from the second.

She was next seen at age 45 when she complained of vertigo, headache, chest pain with radiation to the left arm, and attacks of nocturnal dyspnea. At this time she had a grossly irregular rhythm and her blood pressure was 180/85. At age 46 she was in KUMC for two weeks with rather severe pain of sudden onset in the left shoulder. Examination revealed in addition to the previous heart findings

absence of the left radial pulse and markedly limited left arm motion. A few weeks later she had an episode which started with syncope and headache and was followed by severe abdominal cramps and constipation. The blood pressure at this time was 160/110. She was hospitalized for this illness and while here had several episodes of severe pain in the right chest. She was hospitalized twice in 1950 for nausea and vomiting thought to be due to excessive digitalis.

The menstrual history revealed gross irregularity since age 32 with frequent bouts of menorrhagia. She always had considerable dysmenorrhea. There were nine pregnancies, one full term normal delivery, one therapeutic abortion, and seven miscarriages, the latter in the early months of pregnancy.

Laboratory findings taken from the outpatient clinic records over the past year show the following: Complete blood count, serum sodium, potassium and chloride, and hepatogram all within normal limits. Urinalysis showed a trace to two plus albuminuria. Wassermann and Kahn were negative. Numerous blood cultures negative. NPN 24.1 and 37.5. Iodine—131 uptake—17 per cent.

During the hospital course, aminophylline and coramine were given intravenously. Over a three-hour period, 250 cc. of plasma and two 500 cc. while blood transfusions were given. Oxygen was given continuously. At one time a feeble radial pulse and a blood pressure of 40 mm. mercury could be obtained. Three hours after admission a bilateral stellate ganglion block was performed. The respiratory rate became progressively slower, being eight per minute 11 hours after admission. At this time there were moist rales throughout both lungs. Further respiratory stimulants were given without avail and the patient expired 12 hours after admission.

Dr. Mahlon H. Delp (Chairman): This patient had been under observation for a long period of time. The diagnosis, while not actually mentioned in so many words, should be rather clear. I refer to the primary disease requiring such long constant observation. The signs and symptoms presented the evening of admission indeed were very dramatic. I think there were a dozen people there who were puzzled by this patient's appearance.

Question: Did the findings include a colloidal gold?

Dr. Edwin Slentz (Medicine Resident): Yes.

That was done in October of last year, and recorded as negative.

Dr. Delp: May we have the EKG's.

Dr. E. Grey Dimond (Medicine): The EKG of July 5, 1948, shows auricular fibrillation with a rate that is quite well controlled. There is probably some right ventricular hypertrophy, but it is difficult to confirm it with the number of leads used.

An EKG of June 23, 1950, about a year before her death, is relatively unchanged. The tall R wave noted over the right precordium indicates a large right heart. It is compatible with the auscultatory observation of a mitral rumble.

The electrocardiogram on the day before death shows a pattern that is rather diagnostic and typical. You will notice the fact that no P waves are apparent, that there is an elevation of the RST segment in Leads II, III, and aVf. There is a reciprocal depression in Lead I and aVL. This is a rather typical pattern of a posterior infarction.

Dr. Delp: Dr. Germann, may we have the x-ray films.

Dr. Donald Germann (Roentgenology Resident): The film I have was taken in January, 1950. The heart is not unusually large. It does have some prominence in the pulmonary outflow. The lateral film is a little more interesting. There is a definite bulge in the region of the left auricle. There was definite fullness in the region of the right ventricle. This goes along with what the history and other findings have suggested in the mitral region.

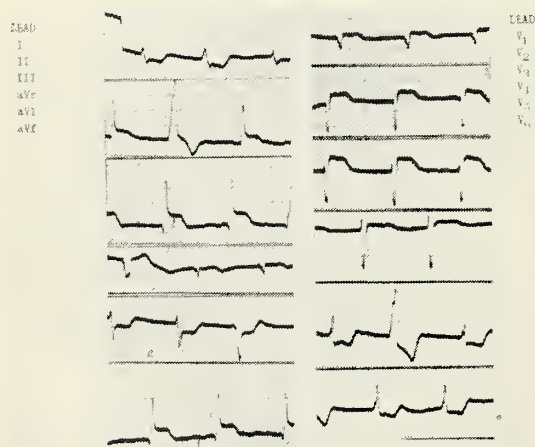


Figure 1. Electrocardiogram taken the day before death, showing the 12 leads in a typically diagnostic pattern. ST segment is markedly depressed in lead I and elevated in leads II and III of the limb leads while the ST segment is depressed in aVL and elevated in aVF. Thus, the current of injury is characteristic of posterior myocardial infarction. The RST duration is consistent with posterio-lateral myocardial injury. Incidentally, the tracing shows auricular fibrillation and frequent ventricular premature systoles.

#### Differential Diagnosis

Mr. Don R. Meriwether (Medical Student): Even though embolic phenomena as a cause of myocardial infarction are classed as rare, even in rheumatic heart disease, they do occur. Here is a woman who had a history of embolic phenomena for some years past. I think she did have a myocardial infarction resulting from coronary embolization.

Dr. Delp: Why do you think she had myocardial infarction?

Mr. Meriwether: On the basis of the EKG findings and the clinical course. That is, severe pain developed during rest with the typical radiation and cardiovascular collapse.

Dr. Delp: Would you elaborate upon the pathogenesis for this infarction?

Mr. Meriwether: I think it is on the basis of a mitral valve lesion of the heart. The contributory factors were present. These include a long history of rheumatic type heart disease and a history of fibrillation which was still present on admission. It is possible that emboli were coming from the valve but more likely from the auricle.

Dr. Delp: Mrs. Sumner, what do you consider the common cause of death of patients who have rheumatic heart disease?

Mrs. Joyce Sumner (Medical Student): Congestive heart failure.

Dr. Delp: About what percentage of them die of congestive heart failure?

Mrs. Sumner: Eighty to 90 per cent.

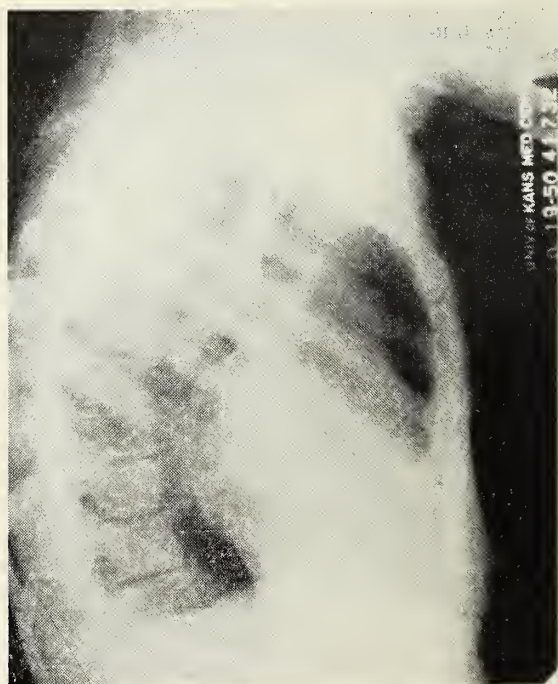


Figure 2. Right lateral x-ray of the chest showing a definite bulge in the region of the left auricle and fullness in the region of the right ventricle.



Dr. Delp: I would like to approach this problem with the staff in just a little different manner. Dr. Wheeler, I would like to know what your differential diagnosis might be, if you had only this patient's symptoms for evaluation. I saw this patient shortly after she had arrived in the emergency room. She was comatose. Relatives said that she had complained of a severe chest pain which came on suddenly while she was sitting up in bed relaxing after her evening meal. She described the pain as radiating into both arms and into the back of her neck.

Dr. John Wheeler (Medicine): The differential diagnosis with those symptoms is considerably limited. Certainly the thing that you would think of first would be anoxic pain from coronary insufficiency or coronary occlusion.

Embolic phenomena with pulmonary infarction is often associated with severe pain but also with symptoms referable to the lungs. Usually these are cough, expectoration of blood tinged sputum, and even collapse.

Dissecting aneurysm of the aorta would not be outside the realm of possibility. Due to the fact that we know reasonably well that she had no aneurysm radiographically, I think that can be ruled out.

I think the diagnosis is obviously coronary occlusion with typical radiation of pain.

Dr. Delp: Dr. Wheeler, do you think this patient's coronary occlusion is on a basis of arteriosclerotic heart disease?

Dr. Wheeler: Yes, sir.

Dr. Delp: Dr. Kaul, this patient had a profound shock. Would that evidence influence your differential diagnosis?

Dr. Philip Kaul (Medicine): I agree with Dr. Wheeler that, if we can believe the history from the family, this patient certainly had typical symptoms of myocardial infarction. Most patients who have a myocardial infarction do not become comatose although a considerable portion of them will have peripheral vascular collapse and shock. However, a certain group of patients with myocardial infarction will become unconscious.

The other thing that certainly should be considered in the differential diagnosis because of this patient's coma is a cerebral vascular accident. The patient had pin point pupils, lack of response, lack of reflexes, and general nervous and vascular collapse. Certainly she could have had either a cerebral embolus or cerebral emboli to one or more areas of the brain.

I think the patient had both a myocardial infarction and cerebral vascular accident due to an embolus. As far as the etiology of the myocardial in-

farction goes, this patient did have some enlargement of the heart although it is not marked. The patient was an old rheumatic, had had pain in the past which was suggestive of, but not diagnostic of, angina pectoris, had had some degree of hypertension for five or six years. She was 48 years old. Tossing those factors together, still it does not seem to produce enough evidence for myocardial infarction due to thrombosis. On the other hand, you still have to accept that as the probable cause of the myocardial infarction because embolization into a coronary ostia is a rare phenomenon which is rarely seen and rarely reported. Those cases reported are most often associated with subacute bacterial endocarditis. The latter diagnosis, I doubt very much.

Dr. Delp: Are there any features of this case suggesting dissecting aneurysm?

Dr. Kaul: I think it fits it in many respects. The degree of shock and collapse fits the picture of dissecting aneurysm. The pain is not typical of a dissecting aneurysm. Most dissecting aneurysms produce pain that proceeds on up into the head or down the back.

I think perhaps this patient is a little young for dissecting aneurysm.

Dr. Delp: I would disagree a bit with Dr. Kaul. I think the pain is not typical. However, there were some features of the pain that made us think of a dissecting aneurysm momentarily—the wide distribution in the upper segment of the body. The patient's appearance of being in cardiovascular collapse would also fit. Patients with dissecting aneurysm do not usually have such marked fall in blood pressure even though having the appearance of cardiovascular collapse.

Dr. Steegmann, we have not yet adequately considered the comatose state noted here.

Dr. Theodore Steegmann (Neurology): The outstanding things given in the history are first, sudden onset with profound rapid coma, pin point pupils and respiratory difficulty. The pain in the chest has been discussed. Several things can happen in the central nervous system resulting in sudden profound shock with coma. Several things affecting the central nervous system cause a more gradual coma with respiratory suppression.

Opium poisoning could more or less be excluded because of the history of sudden onset, although when you see a patient with pin point pupils and respiratory depression, you should always think of it.

Second, primary pontile hemorrhage can occur in persons of this age and particularly in hypertensive cardiovascular disease. This causes a profound shock, pin point pupils in certain cases, and respiratory failure. I have seen quite a number of these cases,

and in a few of them there was a history of chest pain at the onset. These patients usually become unconscious so rapidly that you cannot always get much history of premonitory symptoms. A large percentage have blood in the spinal fluid. What diagnostic procedures you do in a patient like this have to be modified by how sick the patient is. You're not going to run for a spinal puncture needle in every case you see. In both interventricular hemorrhage and pontile hemorrhage, which is interventricular in a large percentage of cases, grossly bloody spinal fluid is important.

Another thing we think of that might cause respiratory difficulty and small pupils would be the very rare intermedullary hemorrhage in the spinal cord in the cervical region. That might more likely follow trauma, but spontaneously occurring cases have been recorded. The small pupils then are due to blocking of the sympathetic pathways. I assume these pupils were constricted before the patient was given the stellate block. At any rate, hemorrhage in that region would affect respiration because the respiratory mechanisms lie just a few segments higher in the spinal cord.

I would like to mention one thing about dissecting aneurysm of the aorta. That is that those aneurysms also affect the small vessels that originate the radicular arteries of the spinal cord and produce occlusion or a cutting off of their blood supply. This produces the picture of thrombosis of the anterior spinal artery which in many ways will simulate intermedullary hemorrhage in the spinal cord. It seems to me a rather remote possibility here.

Dr. Delp: Dr. Bolinger did make a completely correct ante mortem diagnosis in this patient, and I would like to have him tell us briefly why he made the diagnosis.

Dr. Robert Bolinger (Medicine): I considered the same differentials that have been mentioned. The striking thing about this patient was, as Dr. Steegmann pointed out, her comatose state. It would be difficult to base any cause for a comatose state outside of some depression to the brain, either chemical, circulatory or traumatic in origin. The profundity of shock could have been responsible for her comatose state for a short period of time. However, a person who is in a state of shock, if placed in the horizontal position with the feet higher than the head, is soon wide awake and appears to be almost alert. This patient was certainly not that.

The fact that this coma continued over a long period of time could be explained only by some disease of the brain itself. With the previous history of two embolic phenomena, I believe if we hadn't

had an electrocardiogram on the patient and had merely seen her lying there on the table, we would have simply said that she had a cerebral embolism and that her chest pain was probably due to the same phenomena.

This patient had had chest pain over a long period of time. On the whole the story of pain was atypical. The electrocardiogram showed unmistakable evidence of a myocardial infarction. I think it reasonable to offer a common pathogenesis for the electrocardiographic patterns as well as the central nervous system symptoms.

#### Pathological Findings

Dr. Ann Pollack (Pathology): The body was that of a fairly well developed, well nourished negro woman. There was a little distention of the abdomen and a little bit of pitting edema of the ankles and nothing else externally.

The heart was enlarged, particularly on the right. The right ventricle was both dilated and hypertrophied. Both the auricles were likewise. The left ventricle, in contrast, was actually small. The mitral valve showed the characteristic fish mouth deformity of severe mitral stenosis. It admitted the little finger with difficulty.

The other valves were not remarkable. Upon opening the right ventricle some hemorrhage was noted beneath the endocardium. This covered an area of necrosis. The apex of the papillary muscle actually extending into the muscular wall itself was surrounded by hemorrhage. This had the gross appearance of being an infarct. But it was in a remarkable location, on the free wall of the right ventricle. Infarcts in the right ventricle are exceedingly uncommon. They represent somewhere between three and six per cent of all infarcts, but they do occur.

The right coronary artery appeared to be dis-

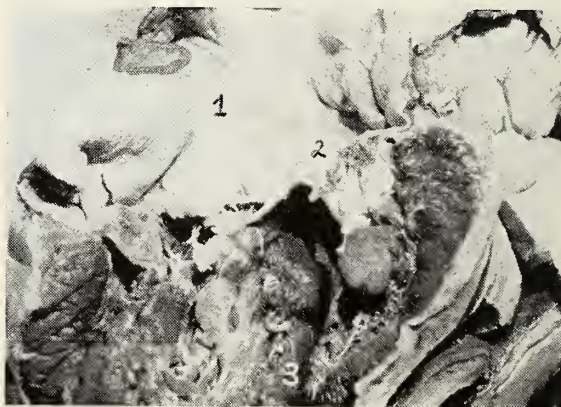


Figure 3. Gross picture of the cut heart. Numeral 1 is on the left auricle, 2 at the mitral stenosis, and 3 on a portion of left ventricle.



tended and in that area of distention was a fresh ante mortem clot. This clot propagated down the distal portion of the coronary artery.

This is a most amazing appearance for an ordinary coronary thrombosis. A thrombosis of any kind conforms to the shape of the vessel in which it is found. However, this thrombosis didn't conform to the shape of it but actually distended it. It looked for all the world as if it had been pushed inward.

The gastrointestinal tract from a portion just beyond the ligament of Trietz through the entire jejunum and ileum, the cecum, the ascending colon, the hepatic flexure, and the right half of the transverse colon were all dilated and presented purple-red discoloration with hemorrhage into the wall particularly in the terminal ileum. That, of course, is the classical distribution for obstruction of the superior mesenteric artery. The superior mesenteric artery also had an ante mortem thrombus obstructing it.

It might be possible, but exceedingly unlikely, to get two simultaneous thromboses, both of them very fresh. The mitral valve did show microscopically a very small adherent thrombus which apparently was the source of the embolus to both vessels.

There were multiple areas of infarction in both

kidneys. There were multiple infarcts in the spleen, all of which were old, and several areas of old softening in the brain. There was also chronic passive congestion in the liver with some cirrhosis.

So this is a case of a patient who had multiple episodes of embolism over a period of many years, who terminally presented a coronary embolism with an infarct in the right ventricle and an embolism in the superior mesenteric artery with infarction of the entire small intestine and the right half of the large intestine.

#### Summary

A 48-year-old female patient long under observation for rheumatic heart disease and its common complications of congestive failure and auricular fibrillation and embolic episodes is suddenly seized with severe chest pain. This situation is immediately followed by coma and profound shock. The electrocardiogram accurately indicated a posterior myocardial infarction. Myocardial infarction due to arteriosclerotic heart disease, dissecting aneurysm, and coronary occlusion due to embolization were features of the differential diagnosis. The latter was the ante mortem clinical diagnosis considered most likely based upon the past history and the persistent comatose state.

#### To Study Effects of Radiation

A national survey to determine the prevalence of congenital malformations among the children of physicians, laboratory aides and others who are constantly exposed to radiation through their work in x-ray or radium therapy will be made soon with the aid of a Public Health Service grant.

The survey, to be made among some 4,000 radiologists in the United States, will be the first attempt to determine in a human population whether and how radiation causes hereditary changes within a period of one or two generations. It may also provide information on radiation effects which may result from atomic warfare, revealing the extent of safety provided by current protective measures.

The University of Colorado School of Medicine, Denver, announces a series of postgraduate courses open to all physicians who are members of their respective county medical societies. The following courses are scheduled: Chest Diseases, October 18-20; Heart Disease, November 15-17; Poliomyelitis, December 13-15; Neuro-Anatomy Seminars, Thursday evenings, August 16-December 27; Pathological-Physiological Seminars, Tuesday evenings, September 24-December 15.

Inquiries may be directed to the Office of Director of Graduate and Postgraduate Medical Education, 4200 East Ninth Avenue, Denver 7, Colorado.

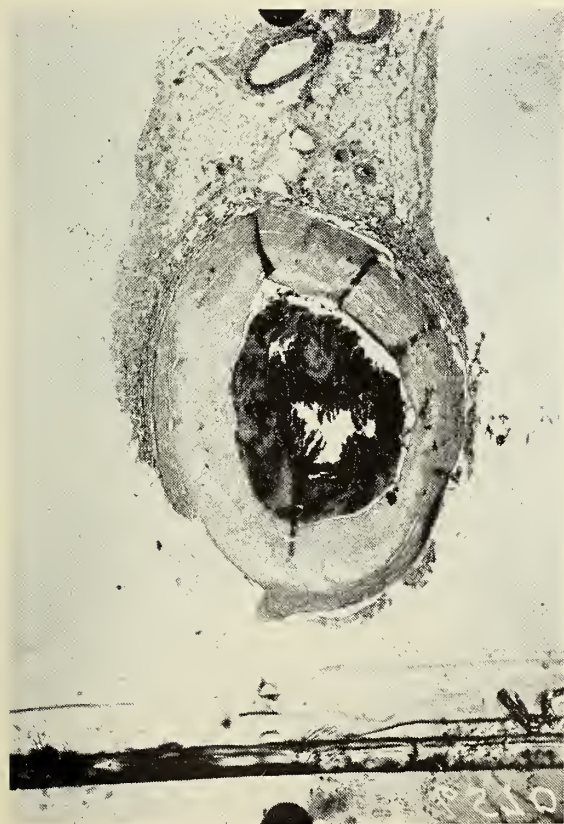


Figure 4. Photomicrograph showing embolus in the right coronary artery.

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## BLUE SHIELD

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In a recent article in *Medical Economics* written by a doctor using a pseudonym, on the subject of hospital-physician relations, Blue Cross and Blue Shield were brought into the picture to a considerable extent. Some of the main implications were as follows:

1. Hospitals are using Blue Cross as one of their tools to dominate the practice of medicine. According to the anonymous author this is done by writing into Blue Cross contracts benefits for medical services such as x-ray, anesthesia and pathology.

2. Doctors have little, if any, voice in Blue Cross policies.

3. Blue Shield is under the domination of Blue Cross for the same general purpose. He implies that joint administration of Blue Cross-Blue Shield inevitably means Blue Cross contracts.

4. Health Service, Inc., a Blue Cross-owned national corporation, was also established to fit in with the long range objectives of hospitals. No mention was made of the fact that Blue Shield is also developing its own national corporation as an autonomous organization to offer prepaid medical care to national employers.

It is important to get the record straight as far as Kansas is concerned. An organization should be judged by its actual practice and methods, and not by generalizations and inuendo imputing hidden motives. If some of the conditions described in the article exist in other places, they do not exist in Kansas.

Blue Cross was organized in Kansas in 1942 primarily through the initiative of the hospitals. However, the enabling legislation called for equal representation on the governing board of doctors, hospitals and public. Today one-third of the Blue Cross board are physicians.

The original Blue Cross contract was written after consultation with the Kansas Medical Society. It excluded any benefits for x-ray, the administration of anesthesia and pathology. The present Blue Cross contract contains no x-ray or anesthesia benefit. It does include pathological examinations, which were put into the contract after consultation and acceptance by the pathologists. Even now it is anticipated that as Blue Shield membership grows to be nearly the equal of Blue Cross, pathology will eventually be transferred into the Blue Shield agreement.

No action is taken by Blue Cross or Blue Shield without consultation and approval of the physicians in question. For example, when Kansas Blue Cross was asked to participate in national accounts such

as U. S. Steel, the contracts for which contained x-ray and anesthesia benefits, the plans first went to the Kansas Radiological Society and the Kansas Society of Anesthesiology for approval. It was finally agreed that in such participation the benefits would be underwritten by Blue Shield in the form of a rider in the Blue Cross contract.

Blue Cross and Blue Shield in Kansas are jointly operated by a single administrative staff. This joint operation is carried out in accordance with a carefully written contract between the Blue Cross and Blue Shield boards. Both corporations maintain complete autonomy in the setting of policies and program. For example, the Blue Shield board has complete authority to decide all matters of fees, contract provisions, types of services covered, types of services not covered; in fact, any question which would affect the practice of medicine. The Blue Shield board is composed of 18 physicians and three laymen.

The benefits gained from joint operation are numerous. However, the main advantage lies in economic operation. With the cost of prepayment plans rising on almost all other counts, Blue Cross and Blue Shield in Kansas have been able to consistently lower the administrative expenses which are now under 10 per cent of total income.

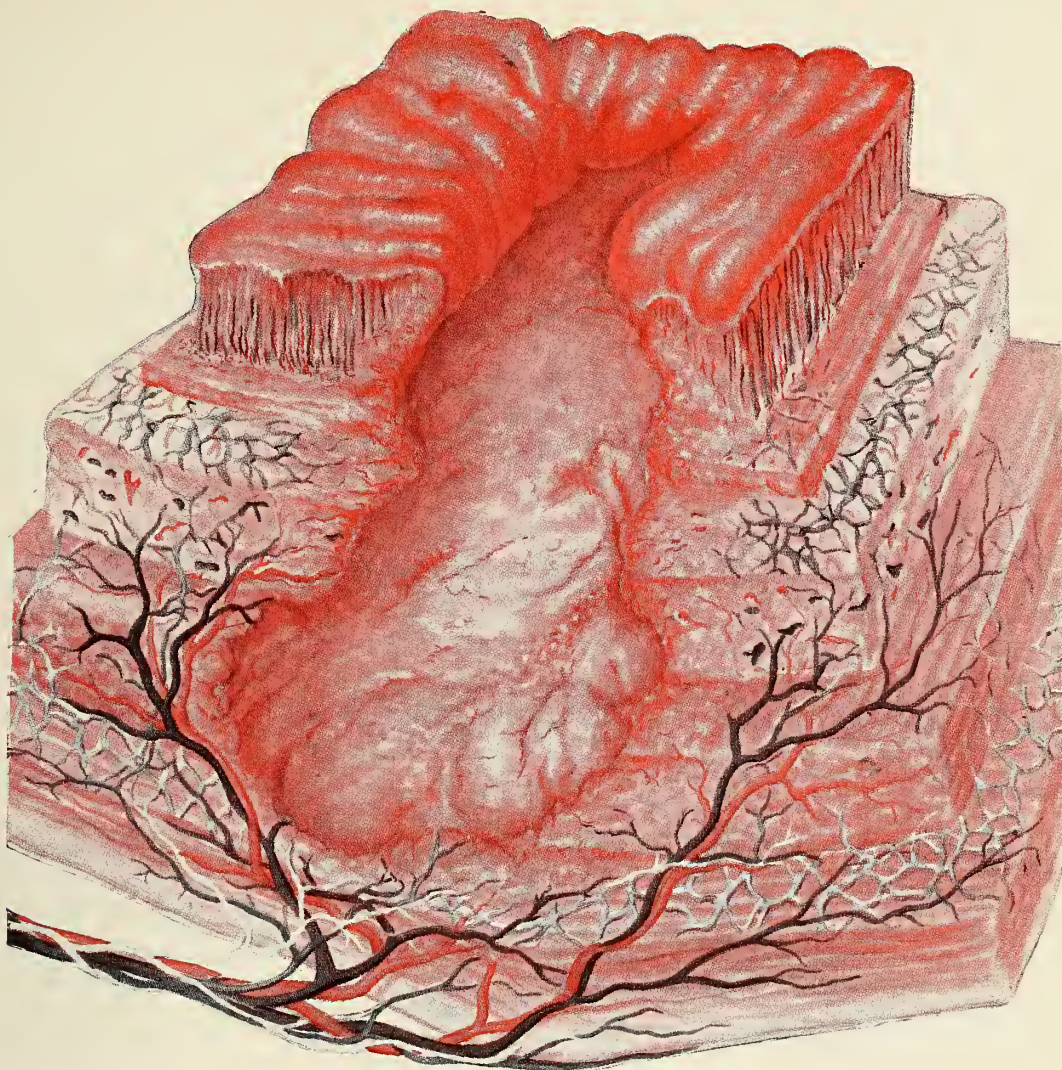
In addition to the structures of organization which permit careful management and separation of medical matters from hospital matters, Blue Cross and Blue Shield in Kansas are carrying out a full program of communications with doctors and hospitals on all important questions. Through the relations program, full discussion is brought about with participating physicians and the hospitals to give an effective voice in stating their wishes concerning the programs.

On the basis that an organization should be judged by what it does, Kansas Blue Cross and Blue Shield submit their records and their actions to the fair-minded judgment of the medical profession and the hospital field. While others may be having their troubles, in Kansas we submit that the structures of our organizations are best designed to eliminate most of these problems before they get started. This is not to say that all of the problems in Kansas have been worked out. There are still many complex decisions to be made. But at least it is hoped that there is not a real basis for distrust in the motivation of either Blue Cross or Blue Shield.

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**SEARLE** RESEARCH IN THE SERVICE OF MEDICINE

## ACTIVITIES OF MEMBERS

Dr. F. R. Croson, immediate past president of the Kansas Medical Society, recently suffered a heart attack and as a consequence has retired from active practice in Clay Center. Plans for the future are indefinite, but Dr. and Mrs. Croson expect to spend the winter in South America. Dr. Croson has announced the sale of his practice and equipment to his partner, Dr. Carl H. Ruff.

\* \* \*

Dr. H. L. Kirkpatrick, Topeka, was speaker on two programs at Eskridge last month, one a meeting of the Kiwanis Club and the other a meeting of the Parent-Teacher Association in that city.

\* \* \*

Dr. Fred S. Dozier, Herington, has been elected president of the board of education in that city.

\* \* \*

Dr. C. V. Black, Pratt, became a fellow of the International College of Surgeons at a meeting held in Chicago last month.

Dr. Ben H. Buck, Jr., recently completed a residency at Hines VA Hospital in Chicago and is now associated with Dr. Willard J. Kiser, Dr. Leo K. Crumpacker and Dr. Harold S. Bowman in Wichita.

\* \* \*

Dr. S. A. Anderson, Clay Center, has been appointed health officer of Clay County to fill the unexpired term of Dr. F. R. Croson, who resigned.

\* \* \*

Dr. L. O. Forney, Hutchinson, was guest of honor at a recent luncheon given by physicians and pharmacists of the city in celebration of his 80th birthday.

\* \* \*

Dr. H. L. Galloway, Anthony, began his 41st year in the practice of medicine in that city on September 1.

\* \* \*

Dr. Ernest W. Crow, Wichita, is doing postgraduate work in internal medicine at the University of Pennsylvania. He will complete the work in June, 1952.

## DEATH NOTICES

### HARRIS W. MANNING, M.D.

Dr. H. W. Manning, 83, who retired from practice in Emporia a year ago, died there September 8 after an illness of several months. He was graduated from Rush Medical College in 1897 and served his internship in St. Luke's Hospital, Chicago. In 1901 he began practice in Eureka and remained there until 1919, when he moved to Emporia. He had taken postgraduate work in dermatology at Tulane University, and in Emporia he specialized in that field. Dr. Manning was a fellow of the American Academy of Dermatology and Syphilology and was an honorary member of the Lyon County Medical Society.

\* \* \*

### CHARLES ALFRED THOMAS, M.D.

Dr. C. A. Thomas, 74, an honorary member of the Montgomery County Society, died in Wichita September 11 after several months illness. After his graduation from Keokuk Medical College of Physicians and Surgeons in 1904, he practiced in Danville and Edna until 1918, when he entered the Army. When he returned from service in France, he took postgraduate study in eye, ear, nose and throat work and practiced that specialty in Coffeyville for 20 years. In 1939 he moved to Wichita to join the medical staff of the Boeing Company, and later was on the staff of the

VA Hospital in that city. He retired from that service two years ago.

\* \* \*

### WILLIAM TILTON RICH, M.D.

Dr. W. T. Rich, 45, who had closed his office in Neodesha a year ago because of heart disease, died at the Wilson County Hospital on September 14. He was a graduate of St. Louis University School of Medicine with the class of 1932, and received his Kansas license in 1933. He served in the Navy during World War II and recently was commander of the third district of the Kansas Department of the American Legion. He was an active member of the Wilson County Medical Society and of the International College of Surgeons.

\* \* \*

### ALEXANDER HODGE BRESSLER, M.D.

Dr. A. H. Bressler, 79, an honorary member of the Pottawatomie County Society, died September 18 after having suffered a stroke the day before. He was graduated from the University of Louisville School of Medicine in 1894 and received his Kansas license in 1901. He practiced in Nickerson, Raymond and Manhattan, and before World War II retired to a farm near Wamego. He opened an office in Wamego during the war and continued to practice there until his death.

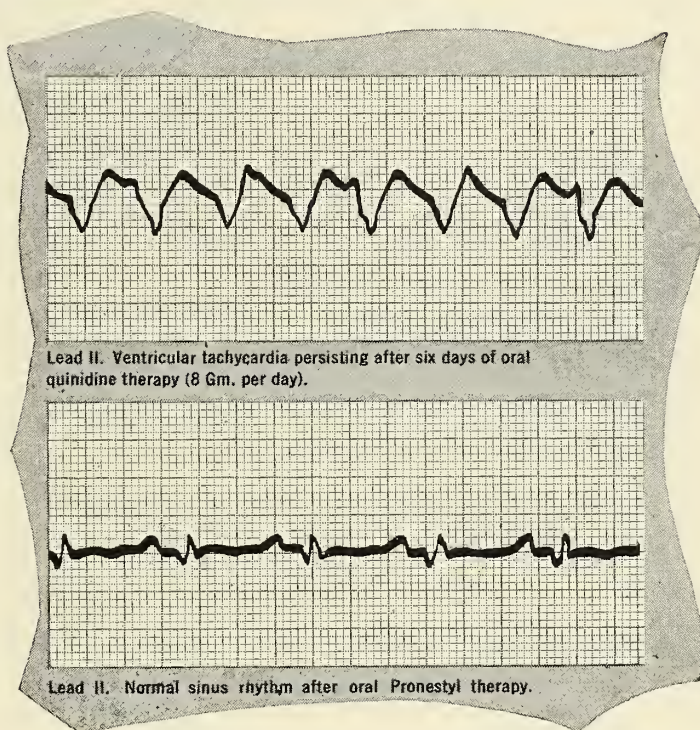


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Dr. James Mott, who resigned as director of the health department for Lawrence and Douglas County in July, has been named director of the Division of Epidemiology of the Kansas State Board of Health, Topeka.

\* \* \*

Dr. John G. Hoffer, Jr., formerly of Wichita, has completed a residency at the Fargo, North Dakota, VA Hospital and is planning to return to Kansas to establish a practice in Medicine Lodge.

\* \* \*

Dr. J. Stanley Reifsneider, Wichita, showed pictures of his boat trip down the Colorado River to the Pratt County Medical Society at a meeting held September 12.

\* \* \*

Dr. Preston J. Shafer has completed a residency at Wesley Hospital, Wichita, and is now associated in practice with Dr. J. W. Shaw in that city.

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## THE KANSAS PRESS LOOKS AT MEDICINE

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*Editor's Note. In this section the Journal reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.*

### Excessive Fees

A prominent surgeon declares for publication that some surgeons actually charge too much, perform needless operations and split fees. Only a very small segment of American surgeons are guilty of these practices, Dr. I. S. Radvin said at the American Medical Association meeting at Atlantic City, but by doing so they threaten "our great heritage."

By that he meant the heritage of an excellent reputation built up over the years by American doctors. But like the bad apple that spoils the entire basket, the medical profession may suffer from the acts of a few individuals. Socialized medicine advocates are quick to exploit them.

Doctor Radvin himself gives some stern advice to his brothers in his speech in which he decries excessive fees, "ghost surgery," the hiring of unneeded consultants and the over eagerness of some surgeons to operate when operations are not necessary.

But such professional excesses are not apt to be alarming so long as members themselves are willing to face the truth and to discipline one another as Doctor Radvin has done.—*Kansas City Kansan*, June 18, 1951.

### Fadeout May Be Temporary

Compulsory health insurance, sometimes known as socialized medicine, may still officially be part of the administration's program, but less is heard of it.

Possibly the fact that 11,000 organizations have officially gone on record against the proposal has something to do with the silence. These organizations are said to include leading national groups representing agriculture, labor, industry, veterans, university women and others.

The American Press, a magazine which is concerned with the problems and activities of weekly newspapers, says that "greater support was shown for the American Medical Association's campaign to fight government medicine than ever has been shown in any other national campaign—including government wartime campaigns."

Another angle in the socialized medicine situation is the fact that 72,000,000 persons now are enrolled in voluntary health insurance plans. They are taking care of their own requirements without government prodding.

Looks like federal medicine is dormant for the time being, but the planners probably will make it up at some future date.—*Dodge City Globe*, August 30, 1951.

\* \* \*

### Those Medical Ethics

A physician is being hauled upon the ethical carpet by his medical society for saying that the recovery of a woman's eyesight was as near a miracle as anything he has ever seen.

And once again the nation is treated to a look at what a part of the medical profession brands as unethical.

The county group thinks maybe the physician reaped a little "unethical advertising" from the quotation. In other words he got his name in too many papers.

It seems to *The Telegram* that if the doctor thought the recovery of the woman's sight was due more to God's ability than his own, he was being honest in not claiming credit and should be complimented for that honesty.

Or do the doctors just consider miracles as unethical generally?

The medical profession admittedly has a hard time keeping its own house swept clean. The business of healing and operating is so complicated that it offers a fine field of harvest for the quack.

But the business of policing a profession can get down to some very sorry hair-splitting sometimes. This appears to be one of those times.—*Garden City Telegram*, September 12, 1951.



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## Senior Thesis from the University of Kansas Medical School\*

## Potassium

Carl C. Gunter, M.D.\*\*

Kansas City, Missouri

In the past few years we have gained a clearer understanding of the significance of potassium in health and disease. The purpose of this paper is to summarize the recent work with respect to this ion with primary emphasis on the (1) physiology of potassium, (2) clinical manifestations of potassium deficit, (3) clinical manifestations of potassium excess, and (4) discussion of a few of the more common clinical conditions affecting the level of body potassium.

## Physiology of Potassium

Though it has been known that the cell membranes are freely permeable to water, dextrose, oxygen, carbon dioxide, urea and other nutrient and excretory products, it was believed in the past that they were impermeable to sodium, potassium and other electrolytes. That is how the great difference in concentration of these ions on the two sides of the cell membrane was explained. Ideas on this subject have been sharply modified in the last few years, and this modification has led to a much better understanding of the clinical physiology of potassium and to better therapy of dehydration.

The average concentration of serum potassium in normal human subjects is about 4.7 milliequivalents per liter with a normal range from 4.0 to 5.4 milliequivalents per liter. In the intracellular fluids, the concentration of potassium is much higher, for here potassium is the principal cation, the cellular sodium concentration being low. Recent animal experiments<sup>1</sup> show that the intracellular concentration of potassium is 23 times greater than that of the serum. The total potassium of the adult body is about 160 grams or 4000 milliequivalents. Of this total amount only about 70 milliequivalents is in the extracellular fluids.

Studies with radioactive isotopes of sodium and potassium and with heavy water have shown that the cells are permeable to sodium and potassium. These elements permeate cell membranes slower than water does. When heavy water was injected intravenously, equilibrium with the total body water was established 120 minutes later. When radioactive sodium was injected, equilibrium with extracellular sodium was reached in 60 minutes but

not with the total body sodium until 24 hours. Radioactive potassium requires 15 hours before reaching equilibrium.

There is no adequate explanation of how and why the tissue cells acquire and maintain so much higher a concentration of potassium than that of the serum or interstitial fluids. Since it has been repeatedly demonstrated that potassium leaves the cells during potassium losses from the body<sup>2</sup> and enters cells during its administration,<sup>3</sup> it appears that there is normally an equilibrium being maintained between the low extracellular concentration and the high cellular concentration.

This equilibrium is unstable, and it is reasonable to believe that this unstable equilibrium is being maintained by the oxidative energy of the cells. If this be so, then cellular anoxia would tend to send potassium out of the cells into the extracellular fluids. Such a phenomenon might account for the rise in serum potassium concentration with exercise and might explain the progressive transfer of red cell potassium to plasma in stored blood.

It has been estimated<sup>4</sup> that, on a normal diet, the potassium intake is about four grams per day. The daily intake of certain foods rich in potassium is quite essential for the maintenance of a normal serum potassium. Potassium balance is preferably maintained by dietary oral intake; however, in some cases it is necessary to give the potassium parenterally.

The commonly used foods that are especially rich in potassium are potatoes, which contain more than 400 mg. per 100 grams. Other foods that contain more than 300 mg. per cent of potassium are meats, fowl, fish of all kinds, sweet potatoes, peas, beans, beets, cabbage, celery, chard, chestnuts, spinach and other greens, pumpkin, squash, parsnips, dried fruits, figs, prunes, banana, pineapple, nuts of all kinds, bran and molasses.

Soon after a meal the serum potassium rises slightly but then falls to its previous level. In the normal adult the excess potassium is excreted in the urine. In gastrointestinal disease not only is the potassium of the secretions lost but also that which is ingested. The kidneys continue to excrete potassium, and thus a deficiency state develops.

The equilibrium between the intracellular and the extracellular fluid is constantly being interfered with by events which unduly raise or lower the

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

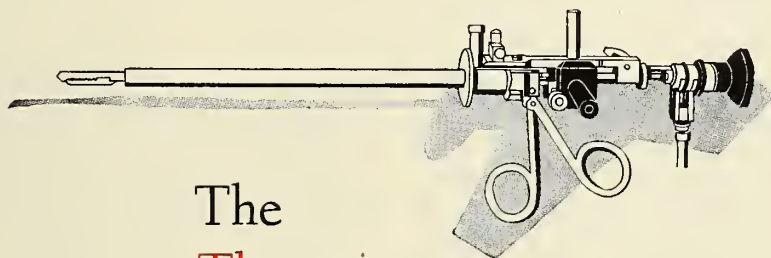
\*\*Thesis written while the author was a senior student at the University of Kansas School of Medicine. Dr. Gunter is now serving his internship at General Hospital, Kansas City, Missouri.



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serum potassium. The functions take place at a faster rate than the slow permeability of the cell membrane would allow. Important among these changes is the continual excretion of potassium from the body by a renal mechanism designed for removing the excess potassium rather than conserving it during deficiency. The renal losses are exaggerated by diuresis, acidosis, and excess adrenocortical hormone.

In starvation, trauma and disease, cellular breakdown occurs with the potassium of these destroyed cells being added to the extracellular fluid. Sometimes it is added at a rate greater than can be excreted or transferred to cells, and an excess of potassium is then found in the serum. There is a definite ratio between the nitrogen breakdown and the amount of potassium released. For every gram of nitrogen broken down, 2.4 grams of potassium are released.

Expansion of the extracellular fluid compartment in the treatment of dehydration by intravenous administration of potassium-free fluids produces a rapid lowering of the serum potassium concentration, because of dilution of the extracellular compartment by the injected fluid, influx of water from cells to lower the osmotic pressure of the interstitial fluid and raise that of the cellular fluid as well as increased excretion of potassium.<sup>5</sup> When the cells have already lost much water, some of the transfer of water from the cells is ultimately annulled by transfer of sodium into the cells.

The concentration of potassium in the extracellular compartment is clearly the resultant of how much of this element comes in and how much goes out. Potassium can enter this compartment by way of the intestinal tract either by absorption of ingested potassium or by emerging from the cells. Potassium can leave the extracellular space by entering the cells or by excretion in the urine. Only in diarrheal states are significant amounts of potassium lost by way of the stool. Potassium is present in the gastrointestinal fluids in quantities as great as 40 milliequivalents per liter in the gastric juice and 8-10 milliequivalents per liter in the intestinal juice. Normally almost all of this potassium is reabsorbed through the mucosa and into the bloodstream to the extent that only about 10 milliequivalents are lost in the feces per day.

In diarrhea and vomiting 10 to 20 times this amount is lost daily. Howard and Carey<sup>6</sup> also found that gastric juice and juices of the small intestine as well contain potassium in concentration several-fold greater than the plasma. This was true in patients with and without free hydrochloric acid, and it has been only in patients suffering from very low potassium levels that gastric juice has contained

less than 10 milliequivalents per liter. Usual amounts are from 15 to 25 milliequivalents per liter. Thus excessive vomiting or prolonged gastric suction might prove to be ways of losing considerable quantities of potassium.

Homeostatic mechanisms are so delicately arranged that it requires a major functional disturbance to alter the concentration of potassium in the extracellular fluids from its normal range. When elevation or depression of the potassium concentration does occur, however, serious consequences ensue.

This continued excretion of the ion in urine is an important if not the principal factor in producing the cellular deficit. This continued renal excretion of potassium does not indicate abnormal renal function, but rather normal function of kidneys under abnormal circumstances. Concentration of urine potassium below four milliequivalents per liter has been recorded during diuresis and potassium depletion. Concomitant serum concentrations in one study were not greater than those in urine. In several series the concentration of potassium was never lower in urine than in serum.

Considering renal tubular function as a whole and assuming that the tubular cells are surrounded by the usual type of extracellular fluid, no evidence has been found that potassium can be reabsorbed against a concentration gradient. This does not exclude the possibility that such reabsorption may occur in a given portion of the renal tubule.

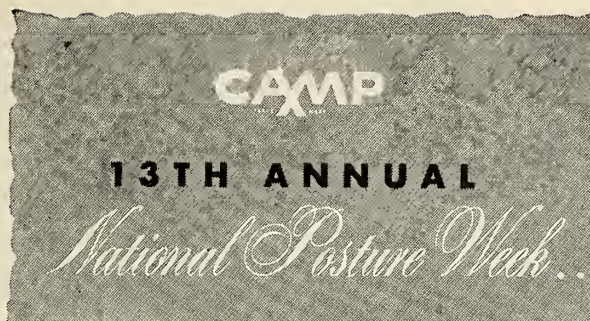
#### Clinical Manifestations of Hypopotassemia

Since in almost all instances of hypopotassemia there is pronounced cellular deficiency of potassium, many of the symptoms may be due to the latter rather than to the low serum levels.<sup>7</sup> This is not absolutely true because in the paralysis of familial periodic paralysis there is a shift of the extracellular potassium into the cells and the symptoms are due to the low serum potassium level.

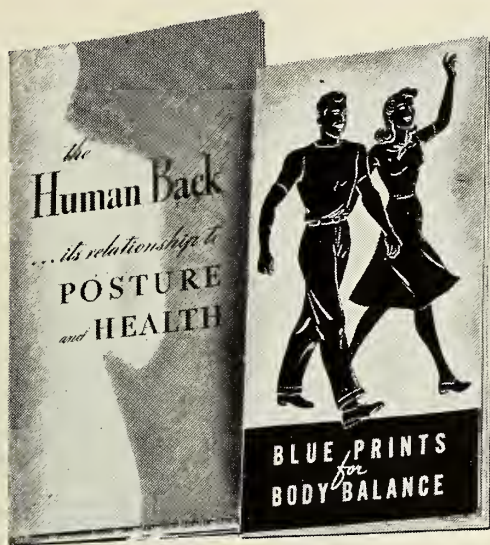
In most cases, however, the clinical manifestations associated with low serum potassium levels are probably produced by the cellular deficiency in potassium. Unfortunately, these symptoms are not specific and are frequently found in many debilitating conditions. The most prominent symptoms are extreme muscular weakness, anorexia, lethargy, distention of the intestine, myocardial degenerative changes and edema of the lungs.

The electrocardiographic observations associated with low serum potassium concentrations are progressive lowering and broadening of the T wave and lengthening of the Q-T interval. The S-T segment usually becomes depressed. As the serum potassium falls still further a U wave may make its





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appearance. These findings are probably directly due to the low extracellular potassium concentration.

Abnormally low levels of extracellular potassium can, on theoretical grounds, result from: (1) dilution by low potassium fluids, (2) losses of the cation in urine or other body fluids, or (3) transfers of potassium into the cells.

#### Clinical Manifestations of Hyperpotassemia

Symptoms of hyperpotassemia chiefly involve the heart. Paresthesias of the extremities and flaccid paralysis have been reported,<sup>8</sup> but in most instances the cardiac observations are the only significant ones. There are characteristic electrocardiographic changes.<sup>9</sup> The T-wave becomes increasingly taller with a narrow base; this can be seen with serum potassium levels of 7.5 milliequivalents per liter. With higher levels, as the T-wave becomes even higher, the QRS complex becomes progressively broader, indicating intraventricular conduction defect. The P-wave may disappear. Ultimately the heart stops in diastole. Death can occur when the serum level reaches 10 milliequivalents per liter, but reversible changes have been known to occur even at higher levels.

The electrocardiographic changes are seen to occur in a fairly regular sequence and at fairly definite ranges of serum potassium. First to appear is an increase in the amplitude of the T-wave, usually accompanied by a shortening of its duration. This change becomes apparent at concentrations of 5.0 to 7.8 milliequivalents per liter, and increases progressively until the T-wave equals the QRS complex in amplitude and brevity. Somewhat later, at concentrations of 7.8 to 9.0 milliequivalents per liter, the S-T segment begins to sink below the isoelectric line and continues to drop as the concentration rises. As the concentration of serum potassium reaches 10.0 to 12.0 milliequivalents per liter, the QRS complex becomes definitely wider. When the concentration reaches 14.0 to 16.0 milliequivalents, which is a definitely lethal concentration, there is almost complete disorganization of the complex. The P-waves first begin to widen and lose amplitude at concentrations of 9.4 to 11.0 milliequivalents per liter and then quickly disappear as the concentration rises higher. No changes are noted in the P-R interval up to the time of extinction of the P-wave. Intraventricular block begins at concentrations of 10 milliequivalents per liter and cardiac arrest takes place at from 14.0 to 16.0 milliequivalents per liter. Usually no ectopic arrhythmias of any type occur unless the rate of serum potassium rise is extremely rapid.

It is important to recognize that these electrocardiographic changes are due entirely to the extra-

cellular accumulation of potassium. The intoxication may take place even in the presence of severe cellular deficiency of potassium. That is why it is important to administer potassium slowly and preferably via the stomach, even in pronounced deficiency; extreme care is required when renal function is too poor to permit rapid adjustment of serum potassium concentration.

#### Potassium in Diabetic Acidosis

The three factors contributing to the abnormally low levels of extracellular potassium that were previously mentioned are probably operative in diabetic acidosis and coma. Such patients usually develop anorexia and vomiting during the early phases of illness. In addition there is an accompanying polyuria. As a consequence the intake of potassium is reduced essentially to zero. At the same time considerable amounts of potassium are lost in the urine. Even though the body stores of this electrolyte are considerably depleted in these various ways, the patients are frequently admitted with elevated or normal concentration of potassium in the serum. This is explained by the attendant contraction of the plasma and extracellular volumes as a result of dehydration. The dehydration is not only extracellular, accompanied by sodium and chloride loss, but is intracellular with potassium and phosphate loss.

The hypopotassemia in the past has been aggravated by our methods of treatment of diabetic acidosis. Treatment in the past has been to give insulin, isotonic sodium chloride solution and alkali either as sodium bicarbonate or as sodium lactate. In most instances in which the patient is dehydrated and acidotic to the point of collapse, this treatment is satisfactory in that it restores the patient to consciousness. However, in the less severe cases there is a fall in the potassium level as the extracellular volume is expanded. Along with the increased extracellular volume, there is an increase in renal function which produces a further loss of potassium. At the same time potassium moves into the cells under the impetus of insulin, restoration of carbohydrate catabolism, glycogen deposition and protein formation. Gluconeogenesis carries potassium from extracellular fluid into the cells. This process occurs in specialized tissue that contains glycogen, such as liver and muscle. It is increased by glucose ingestion, by insulin and epinephrine.

The fall in serum potassium levels is rapid but temporary. In the normal person the change in serum potassium concentration is negligible, but in such potassium deficient persons as those with diabetic acidosis, the rapid decline of an already low serum potassium concentration may produce serious symptoms. The consequence of all of these factors is an abrupt fall of serum potassium to a level pro-





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ducing respiratory paralysis and cardiac damage.

This catastrophe can be avoided in many instances by the judicious use of potassium chloride along with sodium chloride and sodium lactate. The potassium chloride should be given preferably by mouth or stomach tube, two grams at a time. It may be given successfully by proctoclysis. If given intravenously, a liter of fluid should not contain more than two grams of potassium chloride.

In treatment of patients with diabetic acidosis, it is of utmost importance to keep in mind the possibility that symptoms of extreme muscular weakness and rapid shallow respiration are due to a low serum potassium. This is especially true when treatment is characterized by the administration of large amounts of glucose, insulin and fluid, because these are circumstances which favor the rapid deposition of liver glycogen and the establishment of diuresis. Both glycogenesis and diuresis have been shown to remove potassium from the serum.<sup>10</sup>

The striking retention of potassium administered to a series of patients points to the existence of concomitant deficits of this cation in the body cells.<sup>11</sup> This retention was not noted when potassium was given by mouth to healthy adults. Presumably such subjects do not have potassium deficits and hence the administered potassium is promptly excreted. Diabetic patients in acidosis or coma are, however, depleted of potassium.

The hypokalemia of extracellular fluid which develops during treatment on a potassium-free regimen stems from a number of sources. It is obvious that it results in part from expansion of body water with the administration of fluids, and in part from a continued loss of potassium in urine.

The physiological significance of these extensive potassium deficits can be as yet partially and only indirectly evaluated. It is known, of course, that muscular paralysis and abnormally low levels of extracellular potassium frequently coexist. This is not, however, an invariable association since paralysis can occur with normal serum concentrations of potassium, and data of Danowski et al<sup>11</sup> indicates that pronounced hypokalemia can occur without evident paralysis.

At present, only analogies can be drawn as to possible deleterious effects of the deficits of intracellular potassium. It has been shown, for example, that the depletion of cellular potassium produced by over-dosage with desoxycorticosterone acetate or by restriction of potassium intake is associated with degenerative changes in the myocardium.

Holler<sup>10</sup> feels that respiratory paralysis seen in the treatment of diabetic acidosis on a potassium-free regime is a rare occurrence and that unusual

conditions must necessarily be present before such a clinical picture is seen.

#### Postoperative Hypokalemia

A syndrome occurring in patients after operation has been described by Eliel et al.<sup>12</sup> It is characterized by clinical manifestations of apathy, lethargy, nervousness and irritability, muscular weakness, abdominal distention and occasional ileus, occasional confusion, disorientation, delirium, muscular twitching and tetany, electrocardiographic changes and occasional arrhythmias and edema; blood chemical findings of hypokalemia, metabolic alkalosis, hyponatremia, hypoproteinemia and, often hypophosphatemia; and by prompt reversal of the clinical and blood chemical abnormalities upon administration of adequate amounts of potassium.

The syndrome developed primarily in patients who were being fed parenterally and who received little or no potassium. Intracellular potassium deficit was demonstrated by balance studies on patients in whom the syndrome developed after operation. The deficit arises as a result of renal loss. Losses of potassium from intestinal fluids have been small or absent in most cases reported in spite of the fact that gastric and intestinal juices contain a significant amount of potassium as mentioned previously.

Known factors in the pathogenesis of postoperative potassium loss are potassium deprivation, loss of gastrointestinal secretions, large infusions of glucose or saline solution, dehydration and malnutrition. These factors do not adequately account for some of the potassium losses observed.

Evidence is available that adrenal hyperfunction resulting from surgical trauma leads to potassium deficit; the clinical and electrolyte disturbances seen in the syndrome resemble those described in some cases of Cushing's syndrome; metabolic alkalosis and potassium deficit have been produced frequently in human beings by the injection of adrenocorticotrophic hormone and cortisone; and there is a striking resemblance between other metabolic changes seen postoperatively and those associated with adrenal hyperfunction. It is possible that adrenal hyperfunction resulting in potassium deficit may occur after any type of tissue injury.

Therapy in these cases is directed toward replacing the potassium deficit. Death after *injudicious* administration of potassium is not uncommon. Cardiac arrest from heart block may occur in human beings at serum levels of about 10 milliequivalents per liter. Potassium therapy should therefore be undertaken only with an understanding of the requirements, safe methods of administration and contraindications.

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alents of potassium after relatively atraumatic procedures prevents potassium depletion in patients being maintained on intravenous administration of fluids. After more traumatic procedures, the daily requirement can usually be met by the provision of 80 to 100 milliequivalents. This amount is ordinarily adequate for repair of deficits also, since urinary losses tend to decline as the deficit grows. Replacement of potassium losses in most gastrointestinal fluids can be estimated adequately on the basis of 10 milliequivalents potassium lost per liter of fluid.

Since urinary potassium losses are greatest during the first few postoperative days, early provision of potassium is indicated in patients who cannot eat and who must be fed parenterally. It should, however, be withheld during the first 24 to 48 hours postoperatively and from patients who are extremely dehydrated, whose urinary output does not exceed 500 cc. per day or who demonstrate nitrogen retention, unless the serum potassium concentration is low.

The forms of oral and parenteral potassium most commonly used are: capsules or potassium chloride, one gram every four hours (80 milliequivalents per day), which are taken with ample water or fruit juice; and potassium chloride ampoules, each containing 1.49 grams (20 milliequivalents) in 10 cc. of water, which can be added to glucose or saline solutions for parenteral administration in any desired quantity at the bedside. Two ampoules of potassium chloride per liter, providing a concentration of 40 milliequivalents per liter, are usually recommended. This can be administered safely at a rate of 80 to 100 drops per minute. In the presence of serious complications from potassium deficit, a concentration of 80 milliequivalents per liter can be used. Electrocardiograms as a guide to judicious potassium repletion must be emphasized, particularly if determinations of serum potassium levels are not readily available.

Younger patients excrete more potassium than older ones undergoing the same operation, and those who have had the more serious operative procedures, e.g., abdominoperineal resection, excrete 73 per cent more free potassium than the controls who did not undergo any operation, or those subject to herniorrhaphy.

The need for adding potassium to postoperative fluid therapy rests on the assumption that losses of this element should be replaced. On this basis about one or two grams of potassium salt should be added to the daily intake.

The significance of the potassium losses may be discussed in terms of protein losses. This is usually done by establishing a K:N ratio based upon com-

puting the potassium loss in millimoles and the nitrogen loss in grams. A ratio of three or less is considered by most authorities to represent the normal relationship of intracellular potassium to protein. The findings of Elman<sup>5</sup> and associates suggest that the destruction of the patient's protoplasm was not the sole source of the potassium loss, and that much of it originated in another way, perhaps by loss of cell potassium without loss of protoplasm.

#### Hypopotassemia in Intestinal Obstruction

Balance studies similar to those conducted in diabetic acidosis and diabetic coma have served to define, in part, the chain of events which results in low serum potassium values in infants with pyloric obstruction and prolonged vomiting. Although actual measurements during the prehospitalization phase of such subjects are not available, it seems highly probable that the loss of potassium in vomitus is of considerable magnitude. This is, of course, accompanied by a greatly reduced intake of potassium in food. On admission these patients are frequently found to have hypopotassemia and hypochloremia, high serum bicarbonate levels and deficits of body water. It is true that at the time of admission or shortly thereafter, losses of potassium in the urine are quite low. This does not exclude the possibility that earlier losses via this route were of greater magnitude. The usual therapy of low potassium fluids, while oral feedings are withheld, either produces or further aggravates hypopotassemia.

Then potassium is lost from the body via the kidneys or the gastrointestinal tract. A good portion of it is accompanied by chloride, which has come from the extracellular fluids. This unbalanced loss of extracellular anions is compensated for by a rise in extracellular bicarbonate. This is apparently why acute potassium deficiency is usually associated with alkalosis.<sup>13</sup> If such alkalosis is treated by administration of sodium chloride solutions, more potassium is lost, if renal function is good, along with the chlorides; the alkalosis tends to persist, and edema is produced. On the other hand, administration of potassium chloride raises intracellular potassium concentration and that of extracellular chloride and dissipates the alkalosis.

Similar losses are reported in persistent infectious diarrhea of infants.<sup>14</sup>

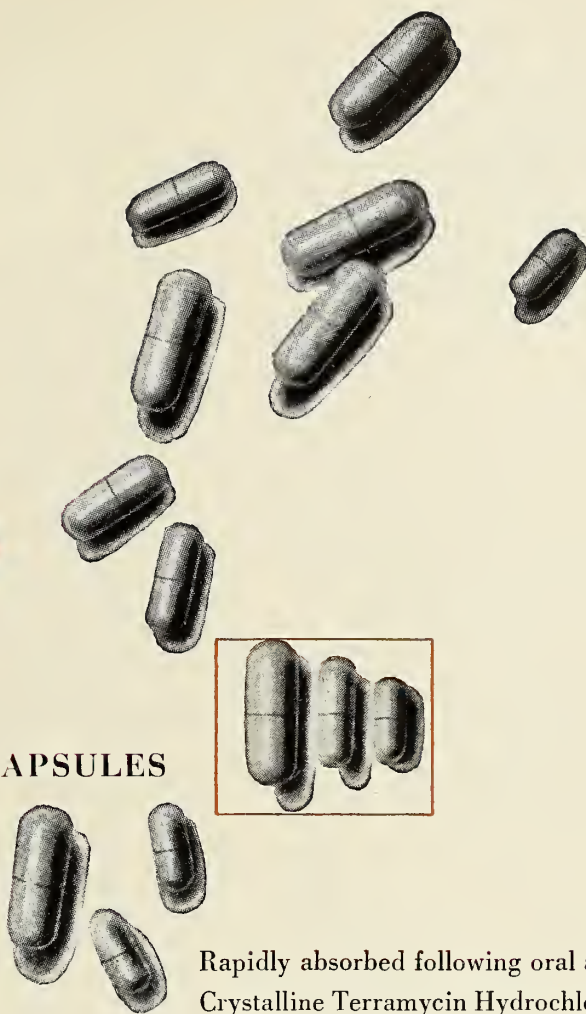
#### Familial Periodic Paralysis

It has been known for many years that the paralytic manifestations of this disease were related to potassium metabolism. As early as 1905, potassium bromide was being used effectively in the treatment of the paralytic state, but the effect was attributed to its sedative action. Many observers have recorded



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the level of potassium in the blood in this condition and have found it to fall as much as 30 per cent while in mild attacks the fall may be only 5-10 per cent.

This is a rare disease affecting males more frequently and characterized by the cardinal symptoms of periodic paralysis, loss of reflexes, and loss of electrical excitability of the muscles. The onset is sudden, usually at night, the paralysis beginning peripherally in the legs and traveling centrally. It is usually symmetrical but it may be unilateral. The paralysis is usually complete, flaccid, and involves the body musculature. Consciousness is not affected.<sup>15</sup> The electrocardiographic changes during an attack of familial periodic paralysis have been studied, and the most striking changes and those responsible for the bizarre form of the electrocardiogram were prolongation of the PR interval, QRS, and the Q-T intervals, alterations in the form of the R-T segments, and decrease in amplitude of the T waves. These electrocardiographic changes are associated with reduction in serum potassium.

Attacks of paralysis have been induced in patients with periodic paralysis by the ingestion of 300 grams of glucose in hypertonic solution. The development of these attacks was accompanied by falling serum potassium levels and was unassociated with concomitant excessive potassium excretion. Recovery was associated with a rising serum potassium level. In some cases, a comparable but less marked and less sustained fall and rise in the serum phosphorus level is observed. Also noted during the phase of maximal paralysis was a suppression of both phosphorus and potassium urinary excretion.

Evidence is also available which supports the hypothesis that hepatic intermediate carbohydrate metabolism plays an important role in periodic paralysis by lowering the sugar content of muscle. It is felt by Gass<sup>16</sup> and associates that the serum levels of potassium in periodic paralysis do not directly determine the onset of paralytic manifestations.

#### Potassium in Chronic Nephritis

In renal failure various authors have noted an accumulation of body potassium, and some have noted concomitant alterations in the electrocardiogram. The electrocardiographic changes accompanying a rise of serum potassium are an increase in the amplitude of the T waves. This is followed by an impairment of intraventricular conduction and cardiac arrest when the serum potassium reaches about 10 milliequivalents per liter.

A search of the literature has not revealed instances of chronic nephritis associated with symptoms and electrocardiographic changes resulting

from excessive loss of body potassium. Brown<sup>17</sup> and associates were the first to report cases of hypokassemia in chronic nephritis. Although the serum potassium was not determined in all of his cases, the response to potassium chloride with the resulting rapid subsidence of the paralysis seems sufficient evidence to justify the deduction that a disturbance of body potassium was the cause of the paralysis observed in his cases. The transient electrocardiographic changes associated with the attacks contribute further evidence of a disturbed body electrolyte balance. The changes seen, particularly the low T waves and impaired auriculoventricular conduction, are those which are also seen in patients who have a low serum potassium from other causes. The return of the electrocardiogram to normal after the administration of potassium chloride by mouth was striking.

It should be remembered, however, that in patients with pronounced renal insufficiency, particularly when there is a decrease in urinary output or complete anuria, the kidney has difficulty in disposing of potassium, and that potassium poisoning may be produced by the administration of potassium salts in abundant quantities. This may occur spontaneously and may reach a degree of intoxication sufficient to cause cardiac arrest.

Cardiac arrest due to an increase in the potassium of the serum to toxic levels has not been demonstrated in uremic patients who have maintained a large volume of urine up to the time of death. Potassium intoxication in patients with uremia is spontaneous and results from oliguria or anuria and failure of renal excretion. The three sources from which the high concentration of potassium in the serum appears to be derived are diet, red cells introduced by transfusion of blood, and tissue metabolism. Of these, tissue metabolism alone is sufficient to cause death in cases where there is marked oliguria or anuria. It has not been possible to demonstrate by chemical methods alone that potassium may be an actual cause of death from uremia in man.

#### Discussion

A discussion of the recent advances in the knowledge of the potassium ion is given along with a presentation of some of the disease conditions in which the serum level of the ion is affected. No attempt has been made to cover all of the disease states in which the metabolism of potassium is affected; only a few are discussed along with their treatment. Similar mechanisms that function in the described disease states also operate in other diseases. A brief discussion of methods of potassium administration is given.



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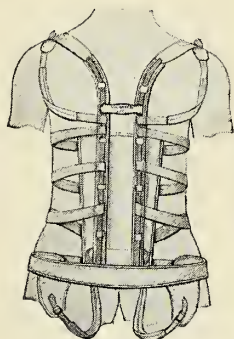
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## BOOK REVIEWS

*Let's Have Healthy Children.* By Adelle Davis. Published by Harcourt, Brace and Company, New York. 314 pages. Price \$3.00.

The author is a consulting nutritionist. She has studied at Purdue, the University of California, Columbia, and the University of California at Los Angeles. She received a Master of Science degree from the University of Southern California Medical School.

The book is intended to be a guide for mothers and expectant mothers. It covers the subject of motherhood and child care through the pre-school

age. It is written in such a way that it should be easily understood by the layman.

Her references are many and the sources are excellent. Many of her statements of fact regarding certain foods, I am sure, would be revealing to many physicians. She very ably discusses the problems of breast feeding, formulas, thumb sucking, the introduction of solid foods and feeding problems. Every physician who cares for infants and children would do well to read this part of the book.

Any mother who reads this book will most certainly come to her physician with many questions. I think this is good. There are many controversial subjects but generally speaking it is a book of well founded facts and is well worthwhile.—J.R.P.

\* \* \*

*Let's Cook It Right.* By Adelle Davis. Published by Harcourt, Brace and Company, New York. 626 pages. Price \$3.00.

"Good Health Comes from Good Cooking," the sub-title of this book, illustrates the author's purpose, namely, promoting the consumption of foods higher in vitamins and minerals. The roasting of meats at low temperatures and the cooking of vegetables in very little water are two points emphasized. The use of black strap molasses, powdered milk, and whole wheat cereals is emphasized to the extent that one almost believes that all sugar should be replaced with black strap molasses, that all milk must be reinforced with powdered milk, and that the use of refined cereals is fatal.

Many statements sound exaggerated to the scientific person, but would be swallowed by the gullible because of the authoritative way in which they are written. No references are given to prove the assertion that "experiments have shown that most mouths are sterile after onions and garlic are chewed."

The book is written in an interesting, attention-getting manner. The first six chapters deal with menu planning, the use of seasonings, kitchen equipment, time saving ideas, and the psychology of introducing new foods. The manner of giving a basic recipe followed by variations should be an aid to new cooks. Principles underlying food preparation are given. Originality and variety characterize the recipes and menus given.

Eight chapters deal with meats, gravies, dressings, fish, and meat substitutes. Cuts of meat are clearly described. Other chapters tell how to prepare appetizers, salads, soups, vegetables, breads, cereals, milk drinks, fruits, desserts, and candy. Canning and pickling are discussed. One chapter tells where to get these "necessary" foods, such as brewer's yeast, yogurt, wheat germ, and soy flour, not commonly



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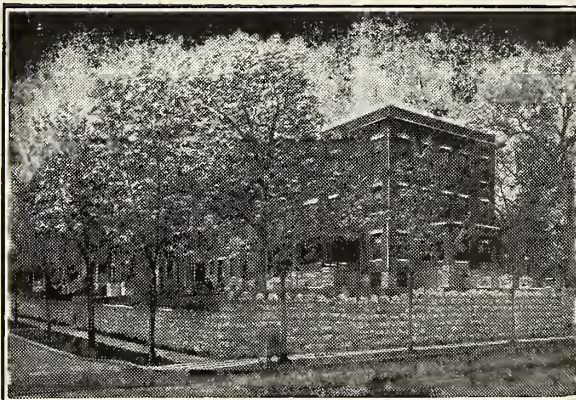
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*The Mechanisms of Cell Division. Edited by M. J. Kopac. Published by the New York Academy of Sciences, New York. 265 pages. Price \$3.50.*

This series of papers was originally presented at a conference of the New York Academy of Sciences. It gives a good cross-section of the numerous experimental approaches to the problems of cell division as presented by a distinguished group of investigators. The first papers discuss the classic methods, including studies of the cleavage and differentiation of marine eggs, cell division in tissue cultures, the behavior of mitochondria and Golgi substance in dividing cells, and the fission of amoeba. Physical methods such as microdissection, hydrostatic pressure, and centrifugation are considered next.

Then pharmacological studies are described. Among the drugs and chemical substances whose effects are reported are colchicine, substituted phenols, nitrogen mustards, podophyllin, and other mitotic inhibitors.

The next two papers are on the effects of irradiation on dividing plant and animal cells. The final paper is a theoretical discussion of the probable ultrastructures of protoplasm (molecular aggregates, small particles and fibrils) and their possible relationship to the mechanics of cell division.

This collection of papers is highly recommended. It shows clearly the wide variety of disciplines requisite to modern experimental cytology. Although many of the papers are short, the bibliographies are in most cases extensive. Anyone interested in pursuing one or more aspects of the research on cell division would do well to start with this publication. It is a coherent, stimulating and well done piece of work.—M.E.W.

#### State Hospital Out-Patient Department

The Topeka State Hospital, serving a 27-county area, announces a new source of referral for psychiatric patients in its recently organized out-patient department.

Designed to provide treatment for patients who cannot afford private psychiatric care, before they become so ill they need hospitalization, the department has a graduated scale of fees in accordance with the patient's income. For diagnostic and evaluation examinations the average fee is \$1.00 an hour. For psychotherapy, the fees range from 25 cents to \$10 a visit. Average fees range between \$2.00 and \$3.00 a visit. Patients who can afford more than \$10 a visit are referred to private facilities.

Physicians may refer patients for consultations and examinations. Where consultations are requested, a report is sent to the referring physician and the patient is re-referred to his physician. Where examinations are requested for the purpose of determining whether the patient might be accepted for psychotherapy in the out-patient department, a report of the examination findings and recommendations is sent to the referring physician. When psychotherapy is indicated, the patient will be carried in out-patient treatment, but will be referred to his own physician for physical treatment when necessary. Progress reports will be sent the referring physician on request.

Physicians wishing to refer patients under this program should write the Out-Patient Department, Topeka State Hospital, giving pertinent data on name of patient, age, marital status, chief complaint, duration of the problem, and a summary of psychiatric and medical status.

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## ANNOUNCEMENTS

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The 19th annual assembly of the Omaha Mid-West Clinical Society will be held at the Hotel Paxton, Omaha, October 29-November 2. Nationally known guest speakers will present addresses and conduct clinics and question and answer periods, and members of the society will give lectures, panel discussions and scientific exhibits. A guest panel on blood dyscrasias is scheduled for Friday morning, November 2. Members of the American Academy of General Practice may receive credit, hour for hour, toward the 50 hours of formal postgraduate study required of them every three years.

Complete information may be obtained from the executive office of the society, 1031 Medical Arts Building, Omaha, Nebraska.

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#### Flood Damaged Drugs Replaced

The destruction of pharmaceutical products as a result of the July flood in this area caused no financial loss to hospitals and pharmacies. All products were replaced without charge by the various firms which had sold the drugs.

Several pharmaceutical houses issued press releases to the effect that they were replacing lost or damaged drugs. A recent announcement from the organization of drug product salesman states that all firms selling in this area have adopted the same policy.

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Esophageal Surgery, One Week, starting October 15.

Thoracic Surgery, One Week, starting October 8.

Gallbladder Surgery, Ten Hours, starting October 22.

Fractures & Traumatic Surgery, Two Weeks, starting October 8.

**GYNECOLOGY**—Intensive Course, Two Weeks, starting October 22.

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## *Relationship of Stress to Autonomic Lability*

Studies in psychosomatics have shown that functional disorders often are a result of the patient's inability to adjust to emotionally stressful situations (stressor factors).

Nervous tension and chronic anxiety, discharged through a labile Autonomic Nervous System, can cause somatic disturbance.<sup>1,2</sup> Such states may involve any one of the organ systems or several at one time.<sup>1,3</sup> The outline below is designed to relate gastrointestinal and cardiovascular symptomatology to the exaggerated response of the autonomic nervous system.

	Physiologic Effects of Autonomic Discharge	
	Sympathetic	Parasympathetic
Gastro-intestinal System	Hypomotility Intestinal Atony Hyposecretion Reduced salivation	Hypermotility Gastrointestinal spasm Hypersecretion
Cardio-vascular System	Rapid heart rate Peripheral vaso-constriction	Slow heart rate Vasodilatation
Functional Manifestations	Palpitation Tachycardia Elevated blood pressure Dry mouth and throat	Heartburn Nausea-vomiting Low blood pressure Colonic spasm

The data here tabulated is from references 3,4,5,6,7, given below.

When the clinical picture is suggestive of functional disorder, the diagnosis is supported by the presence of the following indications of autonomic lability:

**Variable Blood Pressure  
Body Temperature Variations  
Changing pulse rate  
Deviations in B. M. R.  
Exaggerated Cold Pressure Reflex  
Oculo-Cardiac Reflex Abnormalities  
Glucose Tolerance Alterations**

Therapy in these cases is directed toward: 1) relieving the somatic disturbance to prepare the patient for psychotherapy\*; 2) guidance in making adjustment to stressful situations and correction of unhealthy attitudes.

\*Drug treatment using adrenergic and cholinergic blocking agents in conjunction with sedatives, 8,9,10.

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## ABSTRACTS FROM CURRENT LITERATURE

### NPH Insulin

*NPH Insulin: Its Comparison with Previous Insulin Regimens.* By H. M. Baganz, S. C. Carfagno, B. Y. Cowan and E. S. Dillon, *Am. Jnl. Med. Sc.*, 221:1, 1-6 (July) 1951.

NPH insulin was perfected by Krayenbühl and Rosenberg in Hagedorn's laboratory. It differs from protamine zinc insulin essentially in its protamine content. Protamine zinc insulin contains 1.25 mg. of protamine per 100 units insulin, whereas NPH insulin contains approximately 0.5 mg. of protamine per 100 units of insulin. NPH insulin usually acts promptly enough to control the postprandial rise in blood sugar; it reaches its peak action in approximately eight hours and its duration of action is approximately 24 hours. This curve of action is similar to that of a 2:1 mixture of regular and protamine zinc insulins.

In this investigation of comparative actions, 41 patients were studied, on standardized quantitative diets, in a hospital environment, and with constant daily degrees of exercise. Each patient was first standardized and studied on protamine zinc insulin, protamine plus regular (given separately), or regular insulin alone. Comparison was then made by use of NPH insulin, basing comparisons on blood sugar studies four times each day, fasting, two hours after breakfast, 3:00 P.M., and 9:00 P.M.

The morning postprandial effect of NPH insulin was superior in all cases which had previously received only protamine zinc insulin, and as good in most cases which had received protamine zinc plus regular insulin.

The fasting, 3:00 P.M., and 9:00 P.M. blood sugar levels were generally better on NPH insulin than on previous regimens.

The following rule is given for transfer to NPH insulin from other insulins: if the total dose is 40 units or less per day, give an equal amount of NPH insulin. If the dose is more than 40 units previously, give a dose of NPH insulin equal to the protamine zinc requirement plus 80 per cent of the regular insulin dose.—E.J.R.

### Three Grants to K. U.

Three grants for research on heart disease have been awarded the University of Kansas School of Medicine by the United States Public Health Service, according to a recent press release. The grants total \$22,350, distributed as follows: to Dr. Paul W. Schafer and Dr. Hampton W. Shirer, \$14,040 for the analysis of pulse wave forms in heart and great vessel of dog and man; to Dr. Sloan J. Wilson, \$5,160 for clinical and basic research on various blood coagulation factors; to Dr. Parke H. Woodard, \$3,150 for studies of allergic shock.

### Frozen Juice Meets Approval

Frozen concentrated orange juice, introduced four years ago, now accounts for approximately 35 per cent of all frozen food sales, exclusive of ice cream, according to the Council on Foods and Nutrition of the American Medical Association. In its report the Council stated that "frozen concentrated orange juice made from properly selected and prepared fruit is a dependable source of vitamin C and may be useful in the diets of persons of all ages."

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## Surital Sodium\*†

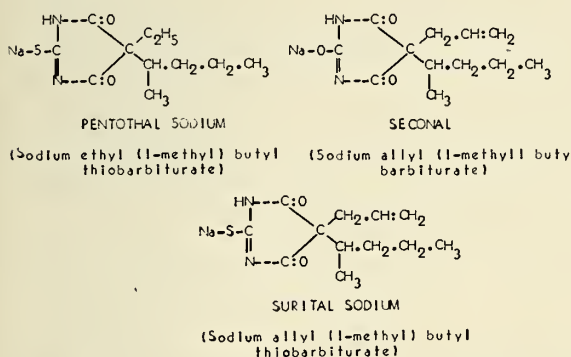
### I. Clinical Use

Paul H. Lorhan, M.D., Gretchen Guernsey, M.D.,  
and Marguerite M. Devine, M.D.

Kansas City, Kansas

Surital sodium, a thiobarbiturate relatively new to clinical anesthesia, has been used in 200 cases at the University of Kansas Hospital. This paper will give a brief description of the drug, review some reports of its use by others, and present a preliminary evaluation of our experience with it.

Chemically, this agent is sodium 5-allyl-5 (1-methyl)-butyl-2-thiobarbiturate; its relation to allied drugs is apparent from the following structural formulae:



The numerous barbiturates in clinical use have similar pharmacological properties; the major variations occur in lag in onset, duration of depressant action, and suitability for use as intravenous agents. In surital sodium we can expect rapid potent action due to the introduction of sulphur and the unsaturation of a side chain.

Surital sodium is supplied in sealed ampoules containing one gram of the dry powder buffered with a small amount of sodium carbonate. Solutions are prepared and used in exactly the same manner as solutions of pentothal sodium. We use a concentra-

tion of 2.5 per cent in the majority of cases, and have found distilled water, normal saline, and five per cent glucose equally satisfactory as solvents. The clear, light yellow alkaline solution is quite stable at room temperature, but occasionally a batch becomes cloudy upon standing for a variable period, in which case we discard it. Helrich, Papper and Rovenstine<sup>1</sup> report solutions kept 14 days at room temperature without change in appearance or potency, but they recommend using only normal saline as the solvent. Dornette and Tuohy<sup>2</sup> state that the solution decreases in potency unless kept refrigerated.

Pharmacologically, the major effect of surital sodium is on the nervous system. The central nervous system depression which makes it useful as an anesthetic is also its greatest potential hazard. Intravenous injection of a suitable dose produces loss of consciousness in a few seconds and surgical anesthesia within a few minutes. The "suitable dose," like that for any other agent, is determined by the clinical signs during induction and maintenance. If skillfully administered for short procedures (under 15 minutes), it is possible to have the patient awake within three minutes after the operation is completed. For example: In the case of a 64-year-old, obese woman requiring closed reduction of a wrist fracture, 10 cc. of a 2.5 per cent solution of surital sodium provided satisfactory anesthesia following premedication with only atropine gr. 1/150. The procedure took 10 minutes; at the end the patient was awake, comfortable, and talking rationally.

In using surital sodium, one gets the clinical impression that in many comparable cases there is a lower anesthetic dose and shorter awakening time than is seen with pentothal sodium. Since dosage varies within rather wide limits depending on both

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†The surital sodium used in this study was supplied by Parke, Davis and Company.

patient and anesthesiologist, further study is necessary to confirm or deny this impression.

While it cannot be stated with certainty that surital sodium has important effects on any tissue except the nervous system, there is considerable controversy in the literature regarding the action of all thiobarbiturates on certain other organs, mainly the heart and liver.

A primary cardio-toxic action, postulated by some workers, is not confirmed by the laboratory and clinical experience of others. Wyngaarden et al.,<sup>3</sup> investigating this problem at the University of Michigan, report: "In the heart-lung preparation, the thiobarbiturates, pentothal and surital, exhibit only a moderate degree of cardiac toxicity, which is no greater than that produced by the corresponding oxygen analogues. Surital is perhaps less toxic, but definitely not more toxic, than pentothal." However, even if these drugs proved to be absolutely

innocuous in their direct action on the cardiovascular system, there remain two mechanisms by which they can be indirectly cardio-toxic: (1) Hypoxia from respiratory depression or obstruction. In clinical practice, this is by far the greatest toxic hazard and the most frequent cause of death during intravenous anesthesia regardless of the agent used. Even moderate hypoxia may be poorly tolerated by an already damaged myocardium: or, if the patient survives, he may have irreversible cortical changes. (2) The parasympathomimetic properties of thiobarbiturates may produce arrhythmias, bradycardia, or hypotension.

Hepatic disease is listed as a contraindication to the use of thiobarbiturates on the theory that these drugs are detoxified in the liver. Actually, knowledge of their metabolism is very incomplete. Animal experiments yield conflicting results, but there is little evidence from clinical reports that thiobarbiturates cause or increase liver damage.

TABLE I  
COMPLICATIONS REPORTED IN RECENT LITERATURE

COMPLICATION	HELDRICH, PAPPER & ROVENSTINE (1,200 cases)	DILLON & DENSON (700 cases)
laryngospasm	8%; severe in less than 2%	0.34%; total 24 cases severe in 4 cases
bronchospasm	less than 1%	1 case; relieved by change to ether
respiratory depression	15%; severe in 4%	
apnoea		0.38% or 27 cases; duration 2 min. to 30 min. (occurred in 5 cases with pt. moving)
tachypnoea		1 case
Cheyne-Stokes respiration		1 case (89 yr. old male)
cough		10 cases; frequently precedes laryngospasm
hypotension	9%; usually transient but may be significant, esp. in older patients. DUE TO RAPID INJECTION	0.70% or 49 cases (21 cases had B.P. drop of 40 mm. Hg. or more; all of these were 55 yrs. or older
arrhythmias	1 case	2 cases; 1 cleared spontaneously, other with ether
emesis	1 case	3 cases
venous thrombosis	1 case	
asthma	4 pts. with history of asthma given surital; attacks were pre- cipitated in 2 pts.	
other	One death in this series which autopsy showed not related to the anesthetic agent	1 case each; "pentothal shakes," prolonged (24 hr.) sleep, dermal reaction, paralytic ileus NO DEATHS NO POST-ANESTHETIC COMPLICATIONS



Helrich, Papper and Rovenstine,<sup>1</sup> reporting on the use of surital sodium in 1,200 cases at Bellevue Hospital, conclude that it deserves further trial because in certain respects it may be superior to similar drugs in current popular use. Among these are: (a) More rapid awakening; (b) Less frequent circulatory depression; (c) More rapid restitution of spontaneous breathing after large doses are given rapidly; (d) More benign nature of laryngospasm.

The largest total dose administered by the Bellevue group was 3.5 Gm. Table I shows their complications, as compared with those reported by another group.<sup>4</sup>

In a series of 700 anesthetics administered at the Los Angeles County Hospital, using surital sodium, Dillon and Denson<sup>4</sup> concluded: "The outstanding feature observed was the similarity of action between pentothal and surital. . . It is doubtful if an anesthesiologist using one of the two drugs without knowing which could differentiate between the two solely on the basis of action. The awakening time is somewhat shorter with surital, but is undoubtedly influenced by the skill of the anesthesiologist. The incidence of laryngospasm is the same as that expected with pentothal, but the individual attacks appear more benign; in general, other complications are the same."

Our own experience with surital sodium is limited to 200 cases; this series is too small to justify

drawing any general conclusions, and we wish to emphasize that this is merely a preliminary report. However, it is of interest that our complications differ somewhat from those reported by others. Table II shows the complications encountered in all cases in which surital was used; however, when multiple agents are used, it is obviously difficult to locate the offending one.

The relatively high incidence of nausea and emesis contrasts markedly with the reports of other workers; it was not particularly associated with emergency procedures where the patient might have eaten a short time previously; neither was there a high incidence of anoxia in these cases as judged by the usual clinical signs.

An increased number of patients apparently develop a bradycardia with this agent, though in the majority of our cases it neither complicated the procedure nor caused determinable sequelae.

If the nausea, emesis and bradycardia are due to central vagal stimulation, surital appears to be more strongly parasympathomimetic than pentothal; this requires further investigation.

#### Summary and Conclusions

1. Surital sodium (sodium 5-allyl-5 (1-methyl) butyl thiobarbiturate) is described and some reports of its clinical use are reviewed.
2. A preliminary report of the use of surital sodium as an anesthetic in 200 cases is presented.

TABLE II

#### COMPLICATIONS OCCURRING WITH SURITAL

Complication	Surital Alone	Surital-Curare	Surital-N <sub>2</sub> O-Curare	Surital-N <sub>2</sub> O	Surital-Spinal	Surital-Other Gen.
Bradycardia	1		3	2		5
Tachycardia	1		2			2
Arrhythmias		2			1	5
Hypotension	3		3	2		3
Decreased pulse pressure		1				1
Laryngospasm	2	1	1			
Cough	1			1		1
Bronchospasm			1			
Apnoea			1			
Resp. depression						1
Nausea & Emesis	12		12	4	1	1
Headache	2		6	1	2	1
Excitement	1		2		1	1
Urinary Retention			1			2
Nystagmus	1					

3. The clinical manifestations of this agent are very similar to those observed with pentothal sodium; because of some apparent advantages, especially lower dosage and a shorter awakening time, surital sodium deserves further trial.

4. Evidence that surital sodium may be more strongly parasympathomimetic than pentothal sodium has been observed and requires further investigation.

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## Surital Sodium\*

### II. Comparison with Pentothal Sodium

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The statement has been made that surital sodium (sodium 5-allyl-5- (1-methyl) butyl 2-thiobarbiturate) is a more potent hypnotic than pentothal sodium. Kelly et al,<sup>1</sup> in laboratory studies on the dog, found surital to be 139 per cent as potent; a similar study by Wyngaarden et al<sup>2</sup> shows surital to be 150 per cent as potent as pentothal. A clinical survey by Dornette and Tuohy<sup>3</sup> found no significant difference in dosage per minute between the two drugs, although they report slightly smaller doses of surital in comparable cases.

Our impressions after a preliminary trial of surital sodium have been previously described.<sup>4</sup> In order to compare this agent more objectively with pento-

thal sodium, we analyzed 200 consecutive cases in which the latter was the sole anesthetic agent. Table I shows respective dosages.

These figures indicate that any advantages from the lower dose of surital are gained chiefly in short procedures. We do not advocate the use of unsupplemented thiobarbiturates for long operations; those few cases which lasted an hour or more represent chiefly head and neck surgery which was unexpectedly prolonged. It is justifiable not to interrupt such procedures as long as the patient's condition is satisfactory.

Complications with these two agents are shown in Table II.

It should again be emphasized that the doses and complications reported here are for those cases in

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TABLE I

#### COMPARATIVE ANALYSIS

ANESTHETIC TIME	PENTOTHAL SODIUM (200 cases)	SURITAL SODIUM (94 cases)
Under 15 min.	77 cases Av. Time 10.6 min/case Av. Dose 452.5 mgm/case Av. Dose 41.7 mgm/min.	47 cases Av. Time 11.4 min/case Av. Dose 395.0 mg/case Av. Dose 34.6 mg/min.
15 to 30 min.	81 cases Av. Time 22.2 min/case Av. Dose 657.1 mgm/case Av. Dose 29.6 mgm/min.	31 cases Av. Time 22.3 min/case Av. Dose 479.0 mgm/case Av. Dose 21.4 mgm/min.
30 to 84 min.	42 cases Av. Time 38.5 min/case Av. Dose 830 mgm/case Av. Dose 21.5 mgm/min.	16 cases Av. Time 40.8 min/case Av. Dose 815.6 mgm/case Av. Dose 19.9 mgm/min.



TABLE II

COMPARATIVE ANALYSIS OF  
COMPLICATIONS

Type	Pentothal (200 cases)	Surital (103 cases)
Respiratory		
Cyanosis	2	----
Severe resp. depression	1	----
Apnoea	1	----
Sneezing	2	----
Coughing	3	1
Laryngospasm	4	3
Circulatory		
Bradycardia	----	1
Tachycardia	1	1
Arrhythmia	2	----
Hypotension	3	3
Miscellaneous		
N & E	3	12
Headache	1	2
Irrationality	2	1
Nystagmus	----	1

which the thiobarbiturates were the sole anesthetic agents used, and no curarizing agents were given. The majority of patients received premedication with one of the belladonna drugs plus either an opiate or demerol in appropriate doses.

We found no significant difference in either incidence or severity of complications except for the previously noted<sup>4</sup> nausea and emesis with surital.

While the incidence of bradycardia was not significantly increased in those cases where surital was the sole anesthetic agent, the high incidence previously reported<sup>4</sup> still remains to be explained.

## Summary

Surital sodium and pentothal sodium are compared as regards dosage and complications.

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## The Treatment of an Attack of Bronchial Asthma\*

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There are two aspects to the treatment of bronchial asthma; the first, of interest to the general practitioner, the treatment of the wheezing itself; and the second, perhaps less immediate, the general therapy of the asthmatic patient.

The treatment of bronchial asthma has progressed as far in the last 10 years as have the methods of treatment used in surgery, medicine, and their subsidiary fields. A physician who treats acute bronchospasm with an injection of morphine is criminally negligent, and one who limits himself to injecting epinephrine may have given his patient only temporary relief. We now know that he has done his patient a real dis-service unless he follows this with the other medications known to be necessary to prevent an immediate recurrence. For the patient in acute bronchospasm of moderately severe degree, an injection of epinephrine alone is not usually enough.

A patient with bronchial asthma is a sick man

suffering from a condition which, if allergic and in United States, causes 7.2 per cent of the total number of illnesses each year, two per cent of the days of disability annually incurred, and 0.2 per cent of the annual deaths. If the vital statistics of hay fever and bronchial asthma are taken, they are found responsible for 3,450 medical cases each year. The total days of disability is estimated at 22,000,000 with a disability rate of 171/1,000, 2,100 annual deaths, and a mortality rate of 1.7 per cent/100,000. A good number of those patients who die, do not expire as a result of the bronchial asthma, but equally often, of the treatment given them. In the light of our present knowledge, the treatment of an asthmatic patient in an acute attack now requires the same thorough understanding of the basic conditions present as is necessary in the treatment of cardiac, nephritic, and other states in which there is both a local condition and its systemic, or general, effects.

A patient with severe wheezing can tax, to the utmost, the physician's knowledge of physiology,

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pathology, pharmacology, and psychiatry, as well as all his other knowledge, culture and background, as well as that special sense for ferreting out important facts which is seen at its highest in the allergist and the detective, and without which both may be wasting their time.

The typical asthmatic attack needs no detailed description. Often forgotten, however, is the fact that between attacks, and much less obvious in the absence of symptoms, the signs of bronchial asthma are nevertheless present. Although the cough and wheeze may be occasional, or absent, the dyspnea is always present either clinically or by laboratory studies. The findings show that the average asthmatic patient always presents a lowered vital capacity which is approximately 60 per cent of the normal. When we go through the so-called static measurement of the vital capacity to the dynamic measurement of volume per unit time, it is found that the asthmatic emphysematous patient falls far short of the normal 75 per cent for the first second, 90 per cent for the second second, and 100 per cent for the third second of expiration.

The history is straightforward. The patient tells the physician of the cough, dyspnea, and the expiratory wheeze. The signs and symptoms are deceptively apparent. The bronchospasm makes itself audible and literally shouts the diagnosis. The distinctive sonorous and sibilant rales and rhonchi, changing in pitch and intensity as the stethoscope is applied over different parts of the lungs, which are obviously held in the position of almost maximal distension, are easily recognized. Clinically, the inspiratory and expiratory velocity rates are slowed, and the amount of residual air is therefore increased. The laboratory studies show that the alveolar and blood oxygen saturation levels are below normal, and at first, the blood carbon dioxide and alveolar carbon dioxide, equally low. The amount of reduced capillary hemoglobin is increased, reaching levels of recognizable cyanosis at the five gm./per cent level. There is an increase of serum in the alveoli, and of mucus into the bronchi.

It is equally obvious that the patient is apprehensive, suffering from the effects of successive "alarm reactions." He is thirsty, and undoubtedly dehydrated. He is often hungry because he cannot stop breathing sufficiently long to swallow. He is tired because of the lack of sleep. The hypoxia and cyanosis, the vascular collapse, are all equally evident. Death, when it does occur, is due to asphyxia. To treat the patient adequately, all of these pathological processes must, when possible, be reversed, although some of the sequelae, especially the emphysema, invariably present in the chronic asthmatic patient, are, in fact, irreversible.

The general practitioner, if he has seen the patient before, knows a great deal about him, or if this is the first visit, can quickly take the basic history. The age at onset is important. The differential diagnosis is helped by asking whether other allergic manifestations, such as hay fever, and less often, atopic eczema, urticaria, or drug sensitivity, are present. A knowledge of familial incidence of allergy will point to the correct causes. A history of previous hospitalizations and the treatment and the results, as well as the facts elicited by previous studies, x-rays and skin tests, all help in the diagnosis. More important, the patient's history of relief with previous medications given, such as epinephrine, aminophylline, ephedrine, antihistaminic agents and hyposensitization, environmental or climatological change, indicate the measures to be taken.

Equally obvious is the patient's condition, as acute or chronic, and if of the former, recurrent, or of the latter, of the severity termed "status asthmaticus."

When visiting a patient in the acute asthmatic state, the factors responsible for his condition may not be immediately apparent, although the physician should question whether the attack was preceded by such non-specific factors as pulmonary irritation, due to the inhaling of irritant fumes; pulmonary infection, fatigue, exertion, or emotional distress. The possibility of reaction to unusual seasonal, environmental, or climatic influences should also be elicited, if possible. The information will also be volunteered that the patient has had an unusual exposure to an allergenic food, inhalant, injectant, or drug, all of which help determine the treatment and the prognosis.

Of greatest importance are the concomitant conditions which may not be immediately recognized. The emphysema, which may be generalized, subcutaneous, or mediastinal, is one such. If other complications are present, they must be treated in their own right, and those which should be in the forefront of the mind, must include the common cold, paranasal sinus disease, bronchitis, pneumonia, pleurisy, bronchiectasis, and less likely to be present, bronchostenosis, segmental atelectasis, and perhaps, with great rarity, obliterative endarteritis of the pulmonary vessels.

Some of the conditions associated with wheezing must be considered. The physician should suspect, and also be able to recognize, wheezing as due directly to industrial, chemical, biological or miscellaneous inhalants; to infections, which in addition to those which may be bacterial may also be mycotic, viral, rickettsial, or parasitic; to neoplasms, primarily or secondarily affecting the lungs; to blood diseases



associated with dyspnea, as anemia and perhaps leukemia; to generalized conditions, as lupus, periarthritis nodosa, Loeffler's syndrome, tropical eosinophilia, cystic disease of the pancreas, and rheumatic fever.

In the lung not only must the conditions listed be considered, but also perhaps others associated with pulmonary fibrosis and the circulatory disturbances, as associated with pulmonary edema, with or without cardiac or renal disease, emboli, or infarcts. A high index of suspicion of the signs and symptoms of other types of respiratory obstruction may save the patient's life. Occasionally, when the patient is seen for prophylactic medication between attacks, it is well to make certain that the symptoms described as a wheeze are not, in reality, noisy respiration due to other causes.

A cough may be due to obstruction or reflex irritation of any part of the respiratory tract, and dyspnea, when present, may also be due to many types of extra-pulmonary obstructions, lesions, or infections, or occasionally due to the hyperventilation syndrome, psychologically induced.

The treatment of an asthmatic attack in children requires different handling than that seen in adults. In the child, the differential diagnosis includes pertussis, which may simulate bronchial asthma, being differentiated, of course, by the absence of any history of allergy, the type of cough and the typical whoop, the high lymphocyte count, and the results of throat cultures. In patients in whom the cough is persistent, and in whom there is a lung infection while the patient fails to gain weight and presents stools which are fatty, foul, homologous and large, the diagnosis of cystic fibrosis of the pancreas must be made. In infants, other conditions seen, although rarely, are tuberculous, tracheal, and bronchial nodes as causing intractable cough and asthmatic breathing by pressure upon the tracheo-bronchial tree, the passive bronchial constriction occasionally simulating bronchial asthma, although marked by inspiratory as well as expiratory wheezing. In children, also, especially those who suffer from prolonged or severe dyspnea, the possibility of a foreign body, of "thymic compression stenosis," however rare, and of vascular anomalies, such as a double aortic arch, must be brought up, if only to be considered and their possibility discarded. A rare patient may present a papilloma of the trachea or larynx or an adenopathy, usually tuberculous, and at the bifurcation of the trachea. Wheezing due to psychological trauma must always be considered in any asthmatic attack in a child in whom other signs and symptoms are absent.

From a clinical point of view, in children, cyanosis with shallow breathing, is the cardinal sign

of a serious condition. If the breath sounds are feeble and there are moist rales, the patient is dangerously ill. If, on the other hand, the rales decrease after an attack of coughing, the prognosis is better. Forceful respiration and the absence of cyanosis are the signs of mild or moderate bronchospasm. In children, an attack of asthma may be associated with a rise in temperature, although no infection is present. Children, especially asthmatic infants, are often neither apprehensive nor orthopneic.

An injection of epinephrine (1:1000), no more than 0.2-0.4 cc., is both diagnostic and therapeutic, when given subcutaneously to children at intervals of 15-30 minutes. If the dose is too large, and the child is of an age when he can talk, he not only grows pale but complains of pounding headache. He becomes obviously apprehensive, and presents an accelerated pulse within 8-10 minutes. A second or third injection, if necessary, can be given at intervals of 15-30 minutes, but if epinephrine does not work within 5-10 minutes, further injections will usually not be effective. Larger doses make the patient "epinephrine-fast," not only because the drug is not effective, but because the patient has a condition which epinephrine will not help. The wheezing is due, not to bronchiolar spasm, but to bronchial plugging and an edematous bronchial mucosa.

For such plugging, the patient requires an expectorant, or if he is more seriously ill, an emetic. In infants and young children, the drug of choice is syrup of ipecac and the dose is 3-10 cc. This may be followed by the drinking of lukewarm water, which will initiate the so-called peristaltic movements of the bronchial tree, moving the plugs to the ciliated epithelium, and then to the tracheal bifurcation of the larynx, at which point the cough reflex takes over. This has been described as "tracheal vomiting." Ipecac will help a patient raise mucus, which might otherwise take several days to reach the cough center. In milder cases, potassium iodide in the saturated solution with the dose suitable to the age is the expectorant considered most effective. Adjuvant treatment, if the patient is in a condition to take it, is represented by an enema, if the bowels have not moved, and unmedicated steam inhalation, if such appears necessary.

For more severe or prolonged attacks, the patient should be moved to the hospital where he can be given 300-1000 cc. of 10-15 per cent intravenous glucose and sedative medication, namely 5-10 gr. of acetylsalicylic acid (in patients who are not aspirin sensitive, rare in children), triple bromides, 5-15 gr., phenobarbital, up to  $\frac{1}{2}$  gr., or if at bedtime, chloral hydrate (3 gr.) orally, in patients who can

swallow capsules. Most children dislike, and will not take, the liquid.

In the hospital, or if necessary, at home, it is usual to give children a salt-free, high carbohydrate, high protein, liquid diet. Psychotherapy is evidenced by a cheerful and reassuring attitude on the part of the patient's family and physician and is an important part of allaying fear, if present.

In the adult patient, there are four states, or grades, of bronchial asthma. In the early stages of the condition, there is a respiratory oppression, associated with difficulty in deep inspiration, which resembles the substernal distress, although in mild degree, seen in patients with coronary heart disease. Such pain is mild, lasts for hours, does not interfere with activity and is not transmitted. The chest is almost always free of signs at this stage.

The next degree is that in which the patient suffers from what appears to be an allergic tracheitis, with a constant cough and dyspnea. Examination of the lungs frequently discovers a subclinical sibilant and sonorous rales. The wheezing during this stage does not occur in paroxysmal attacks.

As the condition grows more severe, the dyspnea becomes more marked and troublesome, becoming expiratory in type, and the patient presents a typical asthmatic attack of a degree which will often disappear of itself, with cessation of exertion, or when more severe, responds readily to epinephrine by injection or by inhalation, or to ephedrine and other drugs taken orally.

When the patient has been in such severe attacks for a day or two despite medication, he is said to be in "status asthmaticus." When such severe asthma continues over a long period of time, the patient making little or no response to treatment, his condition is labelled as "intractable asthma." Such patients may require treatment with Cortisone and ACTH.

The treatment of adults with bronchial asthma, granted that the other conditions listed as important differential diagnoses have been eliminated, is best perhaps discussed from the point of view of the drugs used and the effects to be expected from each.

In mild cases, and while studies are in progress, potassium iodide as an expectorant, in dosage drops of 15-30, taken three times daily, omitting the medication two days each week (Saturday and Sunday) is often enough, although occasional patients need additional medication.

For simple wheezing following exertion, laughter, overeating, emotional disturbances, or mild response to allergenic foods, inhalants, or fumes, the patient may have on hand any of the ephedrine-phenobarbital-aminophylline mixtures, as tablets or capsules.

Such as Luasmin, Tedral, Amodrine, Amisec, Quadronal and others, will often satisfactorily relieve the symptoms. For wheezing during the early-morning hours, an enteric-coated tablet and the capsule may both be given at bedtime. Side reactions, such as palpitations, jitteriness and insomnia sometimes occur requiring additional medication. In males, during the middle-age years, there may be spasm of the prostatic sphincter, and diminution of the urinary stream, as well as actual dysuria. Aminophylline, with Benadryl and racephedrine, as in Hydryllin capsules have been particularly useful in such patients, as have the ephedrine-like synthetic drugs, such as Isuprel and Orthoxine, similarly used.

The "Gay treatment of bronchial asthma" consists of the following prescriptions:

Tincture of digitalis	3.0 cc.
Liquid potassium arsenite	9.0 cc.
Potassium Iodide	12.0 gm.
Sodium phenobarbital	0.75 gm.
Saccharin	0.05 gm.
Amaranth (1% as a dye)	1.2 cc.
Water q.s.ad.	180.0 cc.

This is taken in 4-5 cc. doses four times daily, one-half hour before meals, and at bedtime. Another prescription used consists of the same dose of digitalis, potassium arsenite and potassium iodide, with the phenobarbital omitted, and Allurate elixir and Elixir Lactopepsin substituted in equal quantities to 180 cc., no water being used. The dose is exactly the same. After two months, the lunch hour dose is omitted, and then for the next six or eight months one teaspoonful is taken on arising and retiring, and after one year the dose is one teaspoonful daily at bedtime. In addition, the patients are given a calcium preparation, such as calcium lactate. Some patients take Bile salts and Cascara (Parke, Davis and Company). How much of the success of this treatment is due to the medications and how much is psychotherapy would be extremely difficult to evaluate. Personal use of this mixture in older patients is often followed by occasional immediate relief. The effects are, however, not constant nor continuous.

For one who is more seriously ill, epinephrine (1:1000) may be injected subcutaneously, the dose being 0.2-0.5 cc. or inhalation of the 1:100 solution may be used. Relief is generally noted, subjectively, by the patient in 3-10 minutes; and objectively by the physician in 8-15 minutes. Vaponefrin, Isuprel, and Norisodrine powder are often equally effective. In more seriously ill patients, the 0.5-1.0 cc. of epinephrine (1:1000) can be given intravenously in 1000 cc. of glucose saline. If the patient has had epinephrine with no results for several doses, he is



"epinephrine-fast" and additional doses should not, by any manner, be given him. Larger doses cause the production or release of histamine and may actually contribute to additional bronchospasm, edema and dyspnea. Such epinephrine-fastness, however, may disappear following the use of an anti-histaminic agent, as Benadryl or Thephorin given in 25-50 mg. doses intravenously. Under such conditions, however, the use of Aminophylline is preferable.

Aminophylline by mouth is absorbed slowly and the relief of symptoms is short in duration. Given intramuscularly, it has little or no effect in most patients, and besides, is painful. Papers on the use of rectal Aminophylline report excellent results. Suppositories are almost equally effective. Aminophylline used intravenously, however, is the method of choice. A 20 cc. solution (0.25-0.5 gm.) can be injected intravenously at a rate of about 2.0 cc./minute in a mildly asthmatic, or moderately ill patient. This dose can be repeated two or three times in each 24-hour period. In those more severely ill, 0.5 gm. can be added to 1000 cc. of glucose saline. This can be run continuously, with a total of 3000 cc. daily for a week or more, depending upon the severity of the asthma, the second daily liter being glucose and distilled water; the third, either glucose-saline or glucose and distilled water, depending upon the patient's general condition. The effect can often be supplemented by Aminophylline and ephedrine, given orally. Other aspects of intravenous therapy will be discussed below.

The safest sedative medication consists of sodium bromide, or triple bromides, in the 5-15 gr. dose, combined with chloral hydrate in the 5-10 gr. dose, in simple syrup or Iso-elixir. Phenobarbital may be used orally, subcutaneously, or by injection. Demerol is usually safe in doses of 50-100 mg. intramuscularly or subcutaneously, or 50-150 mg. orally. Demerol in the 100 mg. dose and Scopolamine hydrobromide in the 0.3 mg. dose, combined for subcutaneous use in the "wet asthmatic" is a useful combination to remember. (Segal)

With patients more severely ill, gas therapy must be considered, especially if there is marked hypoxia and cyanosis. Although oxygen (100 per cent) has been given for long periods of time, good results are achieved with oxygen in the 70-90 per cent concentration, combined with other gases using a mask for the oxygen alone, or oxygen and air, or oxygen and helium (20 per cent and 80 per cent, respectively), or oxygen (90-95 per cent), with carbon dioxide (5-10 per cent). This latter, however, is contraindicated in patients with pulmonary hemorrhage, severe emphysema, bronchiectasis, acute

pleurisy with effusion, and in those with marked pulmonary fibrosis. Mixtures of 75 per cent helium, 20 per cent oxygen, and 5 per cent carbon dioxide have also been used for 5-10 minute intervals with Vaponefrin or Isuprel. I have had no personal experience with the three gases used together.

When the patient's symptoms are more severe, so that he is in status asthmaticus, or in a state of intractable asthma for three or more days, he will almost always require intravenous therapy. From the medical point of view, he now presents a bronchospasm with mucous membrane edema, and inspissated mucus, a cyanosis (mild or severe), and a dehydration with a low blood sugar and low sodium, and occasionally, low potassium values. He may be suffering from an incipient or true right or left-sided heart failure. His asthma is undoubtedly not of the simple type, excepting when due to an overdose of a food or a drug to which he is sensitive, but is more often due to infection, tumor, or degenerative processes, such as a bronchitis deformans.

If the physician attempts to take a history from such a patient, he must remember that the previous drugs may have depressed both the insight and the memory. Such patients not only need 500-2000 ml., or more, of water for heat regulation and kidney function, but general treatment, especially in the middle-aged group in whom other conditions, such as fever, essential hypertension, and occasionally diabetes may be present. In the milder degrees of intractable asthma, when such conditions are absent, water by mouth or isotonic glucose in doses of 1000-3000 ml. within 24 hours may be all that is needed, but if there has been excessive perspiration, nausea, vomiting, or fluid loss due to excessive expectoration, especially if ammonium chloride has been used to excess, or aminophylline or the xanthines have been administered, the dehydration may be associated with low blood sodium levels. If the patient has, in addition, been on a low salt diet for hypertension, he may present the same syndrome which may become more intense if fluids have not been restricted during his present illness. If, as occasionally occurs, there has been a removal of chloride from intestinal secretions as by the Miller-Abbott tube in patients in whom the asthma is a complication of an intestinal condition, such chloride losses must be made up. The usual 0.9 per cent solution of isotonic saline may not be enough, and it may be better to use the 3-4 per cent hypertonic solution in smaller amounts, giving the patient his total normal requirements of three grams daily. If in doubt, Ringer's, Hartmann's, or Fisher's solution should be used.

If the patient has an output of 1500 ml. of urine, with a sodium concentration of 3 gr./L in 24 hours,

he has a normal salt and water balance. For one who requires frequent chloride determinations at home, the Fantus Test is worth knowing. The reagents can be carried in the physician's bag. To 10 drops of urine are added a few drops of potassium chromate. With the same dropper, rinsed, is added silver nitrate in the 2.9 per cent solution, drop by drop until there is a permanent color change from yellow to red-brown. The number of drops required is equivalent to the number of grams of sodium chloride in each liter of urine.

In patients seen at home, or where laboratory studies are not available, the clinical signs of the syndrome are viscid sputum and saliva, diminished integumental turgor, dryness of the skin and mucous membranes, and in more severe cases, a wrinkled cornea and soft, receding eyeballs. If blood counts can be taken, there will be a hemo-concentration and a true secondary polycythemia. The laboratory studies will demonstrate a diminished plasma volume, a high N.P.N., and a high blood nitrogen. In extreme dehydration and hypochloremia, the patient's typical dullness may be masked by sedatives as he progresses through drowsiness to stupor and coma. The classical anorexia and nausea may be masked by the respiratory difficulty, and the muscular cramps and twitching may be lacking in those patients who have received codeine for their cough, or Demerol for their sedation.

Sometimes, in dehydrated patients who have received excessive glucose, more than 12 grams hourly, and in addition, epinephrine by injection, there may be a hypopotassemia. Taking the normal values as 16-22 mg./L, there are signs of weakness at the 4.0 mg./L level, with respiratory difficulty at the 3.5 mg./L level, and difficulty in swallowing at the 2.5-3.0 mg./L level. Treatment is by potassium chloride, two grams, or potassium citrate, three grams, every three hours for six doses. If the patient is eating, then foods high in potassium content, such as chicken broth, oatmeal and orange juice should be prescribed. The electrocardiograms, taken in such patients, prove the low potassium levels by the prolonged QT interval; the depressed S-T segment, and the isoelectric, or low, T waves, with occasional prominent U waves.

Similar symptoms occur in hyperkalemia. At the 6-8.0 mg. Eq/L, the P waves are lowered, the PR interval prolonged; the QRS interval is also widened, with wide, deep S waves; the T waves are tall and wide and may be peaked. In severe conditions, the P waves disappear and the QRS wave is biphasic and bizarre.

Occasional patients present a hyperhydration, which when mild, is characterized by nausea, vomiting, headache, and increased salivation, with weak-

ness progressing to convulsions and coma. Hypertonic saline is necessary, although moderate cases may correct themselves in 6-8 hours without medication.

In patients who have been given morphine, or in whom there may be obstructions of the respiratory passages, or an infection, there may be an acidosis, especially if there has been an insufficient food intake or a great deal of vomiting. The acidosis may also be masked by the severe asthma. The carbon dioxide combining power will be diminished from the normal 55-75 volumes per cent, these normal findings being approximately eight per cent lower in females, and approximately 10 per cent lower in children. If blood chemistry studies are available for sugar and non-protein nitrogen, these may help differentiate such simple acidosis from that of diabetic or renal origin. In these patients, sodium racemic lactate injections, if available, may be life-saving. The dose is 10 ml. of the concentrated solution of sodium-r- lactate/kg body weight. The standard solution is diluted with five times its volume of distilled water before administration. These are the patients, of course, who require oxygen by mask or tent.

In the hyperventilation syndrome of asthmatic patients, rarely, alkalosis may be present. This is also seen in patients given, although rarely, expectorants to excess. Here, the clinical symptoms are headache, restlessness, tremor of the eyelids, and the usual anorexia, nausea and vomiting, with dryness of the mouth, numbness and tingling. The condition progresses, as is well known, to tetany and convulsions. The urine is alkaline and its ammonium chloride content reduced. The blood urea is increased. For these patients, acid sodium phosphate in the one gram dose every three hours, by mouth, is helpful, as is glucose given by mouth and intravenously. In these patients, it is essential that oxygen, if used, be combined with CO<sub>2</sub> up to 10 per cent. If there is respiratory depression and carpopedal spasm, ammonium chloride may be given orally in doses of 10 grams for a total daily intake, or intravenously, in the 0.9 per cent ammonium chloride solution until the symptoms are relieved.

In general practice, the patients seen at home in severe status asthmaticus may, after some days, present a severe hypoproteinemia. The history of having been able to take no food, associated with signs of marked weight loss, dryness of the skin and tongue, and in extreme cases, subcutaneous edema affecting not only the lower extremities and the back, but the face and hands, arouses suspicion of this syndrome. Plasma, which contains not only the electrolytes of sodium and potassium, but sugar, fats, and protein (six per cent) is the immediate intra-



venous solution of choice, followed by food or by injectable amino acids, combined with glucose and plasma for nitrogen balance.

The treatment of any concomitant infection, or other conditions, is a true part of the general treatment of bronchial asthma. Psychotherapy is not suggested in the therapy of any specific attack, although it is usually a part of the general treatment between attacks. During such times when the patient is free of symptoms, general treatment of his asthma can be given due consideration. Studies to

elicit the causes and reasons for his wheezing are best done at the office, and during periods of comparative good health.\* The elimination of causative allergens, the injection of those which cannot be eliminated, medication given for the residual symptoms following elimination and injection therapy, the surgery required to correct abnormalities in the nose and throat, and psychotherapy, all belong at this point in the treatment. All of these are absolutely essential if severe attacks of bronchial asthma are not to recur.

## Appendicitis: A Review of 579 Cases\*

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Waltman Walters in a discussion of surgical diseases of the abdomen makes the following statement about acute appendicitis: "Acute appendicitis is frequently encountered and all have much experience with it. I shall, therefore, pass it over quickly. The diagnosis is made from the history and physical findings; urinalysis, leucocyte count and a roentgenogram of the thorax are of help in the differential diagnosis. Operation is indicated even when doubt exists."

Such a clear concise statement in this mid-period of the 20th century would seem, actually, to cover all we might need to say concerning the subject of appendicitis. But it was not always thus and it is of considerable interest to think back, briefly, over the beginnings of specific knowledge associated with this most common surgical disease.

Then, we learn of Lawrence Heister who in 1711 described an intraabdominal abscess discovered at autopsy, the abscess apparently having its origin from a perforated appendix. And later, nearly 50 years later in fact, we learn of Mestivier, who demonstrated an abscess originating from a pin in the appendix, the abscess being surgically drained. Throughout the intervening years some 141 cases of disease of the appendix were described in literature until the important paper by Reginald Fitz who described in 1886, 257 cases of perforating ulcer of the appendix, and finally defined the disease. But it fell to the fortunate lot of Thomas J. Morton of Philadelphia in 1887 to deliberately do the first appendectomy. There follow the works of Ochsner, Murphey, McBurney, and Deaver and the improvement in management of things in medicine

which have created the excellent surgical care we have today.

It is the purpose of this paper to report a review of 579 cases diagnosed as appendicitis or possible appendicitis and incidental appendices removed at the St. Mary Hospital during the years 1943 to 1948, as tabulated in Chart I.

CHART I

	Diagnoses	No Report	Pathology	No Operation Or No Report
1943				
ACUTE	42	5	34	4
CHRONIC	9	----	18	----
1944				
ACUTE	43	0	32	2
CHRONIC	6	----	15	----
1945				
ACUTE	60	2	51	3
CHRONIC	8	----	18	----
1946				
ACUTE	77	0	51	5
CHRONIC	18	----	39	----
1947				
ACUTE	117	0	70	8
CHRONIC	31	----	70	----
1948				
ACUTE	113	0	79	10
CHRONIC	42	----	66	----
TOTAL				
ACUTE	452	----	317	----
CHRONIC	114	----	226	----

Those of the staff who diagnosed and treated these cases may take all the reflected glory they can absorb—since Murphey, Ochsner, McBurney and Deaver are not with us to challenge. However, we

\*Read before the staff of St. Mary's Hospital, Manhattan, Kansas, March, 1951.

must have followed their precepts or those who preceded them for our mortality has been found to be the infinitesimal figure of 0.5 per cent in this series.

And it is interesting further to note that the three cases representing this mortality, which will be discussed in some detail, approach the category of the nearly unpreventable. The mortality, therefore, for the entire series is 0.5 per cent. By years this is tabulated in Chart II.

CHART II  
MORTALITY TABLE

Year	Per Cent	Number of Cases
1943	0	56
1944	0	48
1945	0	72
1946	0	95
1947	0	148
1948	3 cases (1.9%)	159

TOTAL MORTALITY—0.5% FOR SERIES

The first case of mortality associated with disease of the appendix in this series was that of an 89-year-old white woman who had complained of a "sore spot" in the left lower quadrant of the abdomen for three weeks previous to admission. Upon admission she was nauseated and vomited. Physical examination revealed the presence of a diffusely tender abdomen with more tenderness in the right lower quadrant than elsewhere. Rebound tenderness was present. It was decided, because of the advanced condition of the disease, to treat the patient medically and no operation was done. She succumbed and an autopsy revealed the presence of an appendiceal abscess the size of an orange and a perforation at the base of the caecum. There was no general peritonitis.

The second case was that of a 35-year-old white male. He had been under treatment for a peptic ulcer for approximately a year. Thinking his abdominal pain, which he had previous to admission, was due to the ulcer he saw his physician late in the course of the disease of the appendix. His hospital course was stormy from the time of the appendectomy, which was done on admission, through more surgical procedures: a partial bowel resection which included an inflammatory mass and, following an evisceration four days later, a resection of the bowel. The cause of death was reported as "overwhelming toxemia due to hepatorenal syndrome due to inflamed appendix, peritonitis with abscess formation." Total time from admission to death was 12 days.

The third mortality was not directly accountable to the appendix. Complications of polycythemia vera were associated.

### The History

Taking as an outline the brief resume by Waltman Walters, the history becomes of prime importance in the diagnosis of appendicitis. Disregarding the possibility of becoming trite in description of a well known disease, the usual listing of onset of appendicitis must be mentioned.

1. *Pain.* Pain is usually the first symptom. It is often sudden and paroxysmal, may occur around the umbilicus or epigastrium and later localize to the right lower quadrant of the abdomen. We remember, however, that there is no such thing as a typical appendiceal pain, as localization of pain will depend on position of the appendix. Unfortunately, in this summary no correlation between onset pain with position of the appendix could be made, for operation reports only infrequently mentioned the exact location of the appendix in relation to the caecum, the peritoneal wall or pelvis. It must be added for completeness, however, that if the appendix lies low in the pelvis or if it is retrocaecal or if it is floating free in the abdominal cavity in respect to the peritoneal wall, the localization of pain and the presence of rigidity are influenced.

All cases in this series diagnosed as acute, numbering 455, had some type of pain a few hours before admission to hospital. Illustrating the fact that the appendiceal history is seldom "typical," 237 cases are reported as having the onset of pain in the right lower quadrant. There were 107 cases of generalized abdominal pain with no localization to the right lower quadrant, 196 cases with general or umbilical-epigastric pain with localization to the right lower quadrant.

The majority of the 124 cases diagnosed as recurrent, interval or chronic presented no uniform pattern as to pain. Many of the patients came in for so-called interval appendectomies, but all recurrent cases presented histories of attacks of pain recurring over a variation of 15 years to the usual history of the previous two years. Soreness in the right lower quadrant and onset of pain in this area seemed more frequent in these groups as well as in the acute cases.

Unusual histories of onset of pain were obtained in the following instances:

a. One patient complained of onset of pain in the right knee which then localized to right lower quadrant of abdomen.

b. Another described a very severe headache followed by onset of pain in abdomen.

c. A sore throat was described as the initial pain. This may be one of the cases of appendicitis of hematogenous cause.

d. One patient reported as having "gas on stomach" and then pain in right lower quadrant.



e. Two patients described a pain in the right hip as initial onset.

f. One patient had no pain but had a weight loss since her baby was delivered 10 months before. Tenderness was prominent over appendix and a pathology report of the appendix was that of an acute diffuse appendicitis.

g. Two patients had pain beginning in the lower left quadrant.

h. One had pain across chest and radiating to abdomen.

i. One had aching under the right costal margin.

2. *Nausea, vomiting and anorexia.* These symptoms are considered as graduations of the same physiological effect of gastrointestinal irritation. Nausea, vomiting, anorexia may be said to be usual but not constant symptoms.

a. 80 cases reported as having definite nausea or nausea and vomiting.

b. 30 cases reported as having anorexia alone.

c. 347 cases: anorexia, nausea and vomiting not reported by the history or the patient did not have these symptoms.

Thus only 20 per cent of entire series presented these symptoms.

3. *Chills or chilly sensations.* Chills or chilly sensations were described by five patients. It is said that chills are more frequent when the appendiceal vessels are initially involved.

4. *Diarrhea.* Diarrhea was present in 14 cases. It is stated in literature that diarrhea in appendicitis is often associated following use of cathartics. No such history was obtained in these 14 cases.

5. *Fever.* Fever was low grade as is expected in early appendicitis. Many had no pyrexia but those who did had fevers ranging from 99° to 103°.

#### 6. Age Incidence:

Year	Number of Cases
1—10	45
11—20	211
21—30	198
31—40	55
41—50	43
51—60	15
OVER 60	9

It was impossible to find the age of patients in 12 histories. It is obvious that appendicitis is a disease of the young but that no age is really exempt. The youngest case was 11 weeks old. The oldest was 89 years.

#### 7. Sex Incidence:

Males	266
Females	307

These figures do not agree with reported experiences that men are slightly more affected by appendicitis than women.

8. *History of previous attacks:* 305 cases reported one or more previous attacks of abdominal pain; 246 reported no previous attacks; 22 histories did not mention whether or not the patient had had previous attacks.

### The Physical Examination

#### 1. The physical findings:

a. Tenderness in right lower quadrant was reported in over 90 per cent of the cases. Of the remaining 10 per cent the presence or absence of right lower quadrant tenderness was simply not mentioned in the history. Some of these cases had incidental or interval appendectomies.

b. Muscle spasm or rigidity is mentioned in approximately 50 per cent of cases.

c. Rebound tenderness is frequent finding in nearly all of the acute cases.

d. Localized rectal tenderness, although present in most of the acute cases, was infrequently included in the report of the physical examination so no tabulation of this finding can be accurately determined.

2. *The leucocyte count.* The correlation of the white blood count with pathology of blood counts is placed in numerical categories as follows:

	Acute	Chronic
5,000 to 10,000	43	95
10,000 to 15,000	74	70
15,000 to 20,000	78	17
OVER 20,000	66	5

Some clichés relative to the white count:

a. A safe point of view is to regard a leucocytosis of 10,000 to 20,000 as confirmatory evidence of appendicitis.

b. Over 20,000 raises the question of perforation.

c. Children's counts tend to be a little higher.

d. A polymorphonuclear leucocytosis may be present with practically a normal total WBC.

### Associated Diseases and Conditions

During the patients' stay in the hospital or during the operation many associated conditions were noted:

1. Acute hordeolum—One case

2. Pelvic pathology treated surgically or found during operation in which the appendix was removed. This included such conditions as endometriosis, ovarian cysts, uterus fibromata, uterus suspension operations, salpingitis—20 cases

3. Convalescence from colds and respiratory disease previous to appendectomy—five cases
4. Meckel's diverticula—One case
5. Epigastric hernia—One case
6. Pregnancy at 4½ months, at five months and at eight months
7. Infected diverticulae of colon—One case
8. Rupture Graafian follicle—One case
9. Cholecystectomy—Two cases. This of course represents the gall bladder removed during a deliberately planned appendectomy and not the reverse.
10. Inguinal hernia—Two cases
11. Epilepsy—One case
12. Tonsillectomy—Two cases
13. Vagotomy—One case
14. Pinworms in the appendix—Two cases
15. Terminal ileitis—One case
16. Perforated gastric ulcer—One case
17. Umbilical hernia repair—One case
18. Thyroid adenoma—One case
19. Marginal gastro-enterostomy ulcer—One case

#### The Operation

In order to determine any change in technic over the five-year period the type of incision and care of the appendiceal stump are tabulated by years. Operating technique in appendicitis is, in general, so well known and so well standardized that very little time is devoted to it. Only an occasional article appears in literature in these years discussing this subject and those discuss unusual or minor changes in operative technique. It is interesting, though, to review our own methods and note the minor changes that gradually take place making the procedure a more successful and safer result.

The only significant change in type of incision used is the increase of the transverse incision after 1944.

There is shown also an increase to 1948 of the use of non-inversion of the appendiceal stump.

Use of drainage material was reported as follows:

In 1943, Penrose drains in three cases.

Between 1943 and 1948, 10 cases.

In 1948, four cases.

Total, 17 cases in which drainage material was used.

The use of antibiotics varied from one to 22 days.

Sulfonamide powder was used in the abdomen during the operation in 227 cases. Penicillin was used once in the abdomen and penicillin and sulfa were used once.

#### CHART III POSTOPERATIVE USE OF ANTIBIOTICS

1943	
SULFONAMIDE	9
From one to six days	
1944	
SULFONAMIDE	6
PENICILLIN	1
PENICILLIN AND SULFA	1
1945	
SULFONAMIDE	2
PENICILLIN	6
PENICILLIN AND SULFA	2
1946	
SULFONAMIDE	3
PENICILLIN	14
PENICILLIN AND SULFA	3
1947	
SULFONAMIDE	0
PENICILLIN	25
PENICILLIN AND SULFA	1
1948	
PENICILLIN	32
SULFA	1
STREPTOMYCIN AND PENICILLIN	1

#### Pathology

The pathologist reported 281 cases as being acute.

The diagnosis of acute appendicitis was made 439 times. Therefore, in 208 cases that were diagnosed as acute the pathologist did not concur, but reported some type of chronic condition of the appendix. It is not logical, therefore, to assume that this is gross error in diagnosis. It is, rather, logical to assume that correct diagnoses are made in a much higher percentage of cases than the tabulation of the pathological diagnosis would indicate for the following reasons:

1. The reduction in mortality from appendicitis has in great part occurred because of early treatment and, when ruling out other diseases as best one can, the benefit of the doubt is given in the direction of acute involvement of the appendix and immediate surgical care.

2. Symptoms and signs with reference to the appendix are not pathognomonic, in degree, for an atrophic fibrotic or a lymphoid hyperplastic appendix may have enough acute involvement to produce symptoms identical or nearly identical to its chronic counterpart.

For illustration let us consider in detail the fairly well known pathogenesis of the disease. We may say first that appendicitis may occur in obstruction of the appendiceal lumen, i.e. cicatricial scarring,



foreign body reaction such as fecaliths pinworms, swelling of the mucosa, etc.; second, following respiratory infections; third, hematogenous.

One of the last two conditions in conjunction with the first produces the situation of acute infection and death of tissues in the appendix. Added to this is the fact that the appendiceal artery is a terminal one with no anatomic and swelling pressure if the organ places it in jeopardy by blocking of its blood supply.

#### Acute Catarrhal Appendicitis

Acute catarrhal appendicitis can almost be spoken of as a "text-book" disease. It is the earliest and mildest form and seldom appears at the specimen table. It must be limited to the following conditions to be so called: mucosa and lumina propria inflamed only. The appendix appears slightly reddened and has a swollen mucosa (49 cases).

#### Acute Suppurative

This is commonest (210 cases). This occurs as a mild extension from the mild cases just mentioned to a complete disruption of the appendix by gangrenous process with the following characteristics: 1. ulceration; 2. bright cherry red color with ecchymosis through color changes to yellowish, green,

dark red to black; 3. swelling; 4. purulent exudates; 5. abscesses; 6. necroses; 7. fibrinous deposition on serosa; 8. perforation.

Another classification of the acute involvement appendix may be made thus: 1. acute diffuse suppurative; 2. acute focal suppurative. Since this series was not reported in this manner it is impossible to classify them.

The subacute appendix begins and continues as a subacute process or recurs from an acute one.

The chronic appendix is described in many ways. The description of course varies as to the pathologic elements present in the appendix.

One interesting phase of pathology of chronic appendix is the lymphoid hyperplasia. Here there is an increase in the lymphoid elements of the organ and it falls into the category of the chronic lymphoid hyperplasia such as seen in tonsils or lymph nodes of the mesentery and it does, in fact, sometimes co-exist with lymphoid hyperplasia of mesentery nodes.

The miscellaneous groups are more or less self explanatory.

In consideration finally of the pathology of the appendix and the close integration of the terms used, the process of inflammation varies in degree

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### SUMMARY OF PATHOLOGICAL DIAGNOSES

#### ACUTE CATARRHAL

a) MILD ACUTE	(19)
b) ACUTE INTERSTITIAL	(5)
c) CATARRHAL REACTION	(1)
d) ACUTE HYPERPLASTIC	(1)
e) RECEDING SUBACUTE INTERSTITIAL	(1)
f) HEALING	(20)
g) SUB-ACUTE AND CHRONIC HYPERPLASTIC	(2)
<i>TOTAL</i>	<i>(49)</i>

#### ACUTE SUPPURATIVE

a) ACUTE DIFFUSE	a) GANGRENOUS (14)
ULCERATIVE (210)	b) GANGRENOUS WITH PERFORATION (5)

SUBSIDE OR OPERATION

SUBSIDE OR OPERATION PERITONITIS AND  
OPERATION OR SUBSIDE

#### SUBACUTE

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### CHRONIC (?) OR RECURRENT

#### CHRONIC FIBROUS

a) ATROPHIC FIBROTIC	(7)
b) SCLEROTIC	(41)
c) OBLITERATING	(59)
d) ATROPHIC OBLITERATIVE	(3)
e) ATROPHIC	(38)
f) SCARRED	(28)
g) FIBROTIC	(1)

#### LYMPHOID HYPERPLASIA

a) HYPERPLASIA	(18)
b) HYPERPLASTIC OBLITERATIVE	(1)
c) HYPERPLASTIC ACUTE	(1)

and produces physical findings and symptoms which vary also in degree, but not always in proportion to the acuteness of the process.

For completeness actinomycosis, tuberculosis, and tumors of the appendix should be mentioned. No cases of actinomycosis or tuberculosis were reported. One case of the commonest tumor, the carcinoid tumor, is reported. The carcinoid tumor is almost invariably non-cancerous.

#### Chronic Appendicitis

The clinical interpretation of chronic appendicitis is a much greater problem than that of acute appendicitis. The diagnosis seems to be made frequently and, when made, is difficult to prove even when the appendix is studied by the pathologist.

A summary of pathological diagnoses is based on a supposition that the various forms of chronically involved appendices develop their conditions as a result of previously occurring acute involvement either as repeated attacks of acute inflammations or a gradual process of inflammatory changes progressing to the final chronic state. Many have questioned this pathogenesis. Especially has it been questioned in regard to the fact that fibrosis, being an end result of inflammation, is not an indication that the inflammatory reaction exists at the time the surgeon removes the appendix. In other words, it is difficult to correlate the patient's symptoms of dyspepsia, nervousness, poor appetite, etc., as being due to a chronically fibrosed or obliterated appendix in which the signs of inflammation have subsided.

#### CHART IV APPENDICITIS

Age	Keith	This Series (Chronic Obliterative)
10 YEARS	4% (2)	3
20 YEARS	7% (15)	27
30 YEARS	17% (33)	18
40 YEARS	25% (14)	9
60 YEARS	36% (5)	2
70 YEARS	50% (4)	2

Some theorists such as Sir Arthur Kieth, Ribbert, Kelly at Johns Hopkins and Boyd in the Winnipeg Hospital believe that these atrophic changes are a result of more or less natural retrogressive processes associated with the advance in years.

One very interesting feature of the development of the chronically involved appendix is the concept of Masson regarding the hyperplasia of non-medullated nerve fibers found in the submucosa of these appendices which may also contain many small circumscribed neuromas. The muscularis coat may also contain a marked hyperplasia of Auerbach's plexus with numerous ganglions with cells several times larger than normal. Further study may reveal in the future that nerve tissue hyperplasia accounts for symptoms associated with these chronic changes seen in the appendix.

#### CHART V

##### COMPLICATIONS

WOUND DRAINAGE AND WOUND INFECTIONS	25
HYPERPYREXIA	
TEMPERATURE OVER 103° p.o.)	8
HEMATOMA OF WOUND	2
HORDEOLUM	1
SEVERE SULFONAMIDE REACTION	1
PHARYNGITIS	1
CHILLS (p.o.)	1
MUMPS	1
MENTAL CONFUSION (p.o.)	1
SEVERE VOMITING AND ABDOMINAL PAIN (c.o.)	1
DIARRHEA	1
PNEUMONIA	2
DIABETES	1
HEART DISEASE	2
MARGINAL ULCER GASTRO-ENTEROSTOMY	1
BOWEL RESECTION, EVISCERATION	1
TOTAL COMPLICATIONS	50
PERCENTAGE	9.6%

##### Summary

Appendicitis occurring in 579 persons between the years 1943 and 1948 inclusive has been studied. They include a mortality of 1.9 per cent for the year 1948 and a mortality of 0.5 per cent for the series.

#### Fourth Annual

#### MID-WEST CANCER CONFERENCE

April 3 and 4, 1952

Broadview Hotel, Wichita



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## BLUE SHIELD

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### The Quiet Approach

The gist of a recent editorial in the *Lawrence Daily Journal-World* was that doctors should not relax their efforts to inform the American people on the advantages of private medical practice over a compulsory governmental program. Commenting on a recent announcement that the American Medical Association was relaxing its campaign against socialized medicine because the battle has been won, the *Journal-World* said in part:

"It behooves the doctors to quietly continue to sell the public on the advantages of private medicine over government operation of all offices and hospitals. It is up to the doctors to make the present plan work efficiently and satisfactorily for the public good."

The golden opportunity for the ultimate victory of free medicine lies in the years just ahead. The job of "quietly selling" the public must be done through deeds as well as words. As delightful as it might be for doctors to forget the economic problems of good medical care so that all of their energies might be devoted to its practice, the time is still not right for such a luxury. There is still the need for a positive selling job even though some of the hue and cry and feverish excitement have died down.

The economic problem is still present and could easily become much more acute as inflation continues. In Kansas, for example, less than half the population is covered by some form of hospital protection. An even smaller percentage has protection against the cost of medical care. At least 85 per cent of our people need this kind of protection, but many still do not understand the problem.

A positive program on the economic side would be a greater promotion of Blue Cross and Blue Shield. We like the phrase "quietly selling." It fits in with the approach Blue Cross and Blue Shield have tried to follow. This year more than ever we are asking the doctors and the hospitals to help in bringing about a greater public understanding of the problem and of the positive way it can be met. This will not require flamboyant claims, overstatements and scare headlines. It can best be done through complete honesty with the public, through contracts that deliver what they say they will deliver, and through sincere identification of the doctors and hospitals as the originators and backers of the Blue Shield and Blue Cross program. It can be done by talking with people around the table, by meeting with them in community groups.

The years ahead will give us time for the quiet approach. Through the very plans which the doctors and hospitals have created, we can find most of the answers to the economic problems of good health care. This can be done with one main proviso: If the medical profession will continue its interest in the problem and will actively participate in the solution.

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## SOCIALIZED MEDICINE

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This completes a series on the subject of socialized medicine. Twenty-three separate items have been published on this subject presenting factual information both from the proponents and opponents of socialized medicine. It is hoped that compilation of this material will provide physicians who are requested to write or speak on this subject with illustrative data.

At the moment advocates of socialized medicine are still active. The recently adjourned Congress saw numerous bills designed to further one or another phase of this program. There is no lull in the pressure that is being brought to bear. However, in the interim between sessions of Congress, there will be no new activity in this field and for that reason this series will be discontinued until further legislative attempts arise.

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### Laboratory Program Announced

The College of American Pathologists has announced a program to improve the efficiency and to increase the uniformity of medical laboratory analysis. The initial step will be the supplying of highly standardized and very accurate solutions to large and small pathology laboratories to develop and maintain uniformly reliable test solutions in the field of chemical determinations.

College members, who represent about 80 per cent of all certified pathologists, now have a uniform source of standardized, accurate chemical solutions prepared in such a manner that deterioration is unlikely. These solutions can be used to verify the correctness of the individual laboratory stock solution, to check the accuracy of personnel in performing a test, or to serve as a daily reference standard when determinations are made.

Pathologists have taken the lead in an attempt to improve the accuracy of laboratory tests. The first step, dealing with the standardization of the Wassermann test, was taken by the American Society of Clinical Pathologists before the College of American Pathologists was organized. Before that time, samples of the same blood tested in different laboratories sometimes produced contradictory results.

## PRESIDENT'S PAGE

Dear Doctor:

At the present time we find the complexities of living increasing by the day. Tension has so steadily been mounting that many of us have felt the breaking point to be just around the corner.

The complexities, tension, taxes, et cetera seem to have clouded our vision and thinking to the point that recognition of friendly assets and the maintenance of balance in reason have at time lacked appreciation. It is gratifying, however, to find that many still possess the balance, the reason, the clarity in thinking and continue to recognize normal allied relations!

I am glad to report to each of you I have been privileged to talk with officials of the professional societies of the doctors of dentistry, of hospital administrators, nurses, pharmacists, and of veterinary physicians and surgeons. I find we are in essence, of singular thought and opinion!

That opinion is that we are all interested in the health and protection of Kansas citizens and we are all closely inter-related, yet in confusion of purpose and lack of organizational understanding each of us has experienced some myopia and has overlooked the forest on account of the trees. Recognition of errors with proper adjustments is truly evidence of substantial progress!

I am proud to report to you that in my humble opinion each of our normal allied professional groups displayed equity, courage, and balance and gave evidence that was positive in character that they were acutely aware of their individual responsibilities as well as our joint obligations. To me the unanimity was most wholesome and stimulating.

I proposed a committee without official capacity (wholly advisory) composed of the allies with equal representation for the purposes of unity in striving for better government, unity in improving the public's health, unity in seeking better economics, better understanding of our social problems and manifestations of political strength in seeking to maintain the principles of true Americanism, one of which is private enterprise!

It is with pride I report to you that your Council approved the proposal on November 4, and may I suggest you seek the details from your Councilor and furthermore take steps to institute the machinery on local, county and community levels. Proof of the pudding is in its tasting!

In conclusion, I should like to emphasize that your support and participation in your society will render you excellent dividends today and posterity will record you as a worthy member of the greatest of all professions.

Very truly yours,

A handwritten signature in cursive script, reading "C. H. Benage". The signature is written in dark ink and is positioned at the bottom right of the page, below the typed name "C. H. Benage".



## EDITORIAL COMMENT

## A Fable

A strong young man came into the wilderness, broke it open and made a farm. Soon others around him began to till their land until he was the center of a growing community of pioneers. They all prospered until barbarians began to raid and plunder the possessions of those on the periphery.

In a short while the outlying farmers became hungry because their crops were continually destroyed, so the strong young man whose land had not been molested shared his abundance with those who were less fortunate. For a time they all survived in this way. The farmer in the center was not altogether altruistic. He recognized this as insurance against the destruction of his property so he was satisfied.

Before long the farmers at the wilderness fringe recognized this also. They saw here an opportunity for capitalizing on their misfortune so bargained for more of his goods. Becoming alert to this possibility they organized against him. Their motive was not altogether destructive for they united in their common welfare. Therefore as a unit they presented a logical plan to the strong young man in the center who accepted it and paid higher rates for his protective insurance.

His one farm now had to provide food for those living on many farms. He gradually discovered that they no longer planted seed on their land but were content to exist on what he gave them. Nor did they expect to pay him because they reasoned that the protection he had from them was payment enough. It was not that his neighbors were essentially lazy. It was only that experience taught them the futility of effort and the contract with this young man made effort unnecessary. So things rocked along for a while without any great crisis, but not forever.

Something else began to happen. No one can tell exactly how this all came about or what was first because history crowded the stage. Suddenly everyone began to feel differently and all previous contracts came apart like this:

The outlying farmers, no longer in fear of losing their crops, now had only to protect their lives. This, being a serious business, soon reacted to where they and their savage attackers became acquainted. As they saw more of each other an understanding grew up and finally these farmers and their enemy made their own agreement. In return for certain considerations there would be no further attacks. It was that easy.

Of course the considerations involved the strong

young man in the center who was then in the dilemma of finding those he had benefitted were now united with the enemy and in this bizarre situation he would pay both. To do so was bankruptcy, to refuse was suicide, so he did the only thing he could do. He also abrogated his former agreement and secretly made a deal directly with his principal enemy, the savages. By ignoring his former friends he had only to satisfy the attackers, which he did.

And that set the stage for the end of the fable. The outlying farmers were now without food for themselves, nor could they provide the considerations required by the enemy, so they were destroyed. Then the strong young man found himself without allies. The attackers made more and heavier demands. When it became altogether impossible to comply, the enemy moved in and killed him also. In a very short while the savages with no one else to plunder began fighting among themselves and the farm was soon a wilderness again.

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Eye Testing for School Children

Visual defects in school children, long recognized as factors contributing to emotional, social and educational maladjustments, have been cared for or not according to the attitude of parents. A plan for the systematic search for children with eye defects and the correction of these conditions has recently been developed by the Committee on Conservation of Eyesight.

The value of such a service is immediately apparent and has been, of course, for a long while, the only deterrent being the lack of a practical method of accomplishing the desired result. This, it is believed, has been found by the committee and is now recommended to the profession.

Visual defects in children can easily be discovered by any intelligent adult who has considerable contact with children. By way of example, the school teacher will learn within the first month which of her children are unable to read what is written on the blackboard. Therefore, the recommended program is not only simple but is also convenient and inexpensive.

Sight defects can readily be determined on a mass testing basis through the use of the ordinary Snellen chart. After a minimum of instruction which is available through the medical social worker of the Services for the Blind Division of the State Board of Social Welfare, the average teacher can give the Snellen test to her pupils. This can be given during school periods with a minimum loss of classroom

time, and is efficient enough to indicate all children with pronounced disorders in vision. Once this knowledge is obtained, a letter may be sent the parents advising a more complete examination and correction wherever that is deemed advisable. They need only to be told that a visit to their family physician is recommended.

The above plan is presented as a potential public service project for county medical societies. If the county society will make the necessary arrangements with school authorities, including acceptance of the program and the permission to utilize the services of a teacher or school nurse for giving the tests, the Kansas Medical Society will then make available at no cost an instructor who will advise the teacher on recommended procedures. That is all there is to the program except for follow-up work. This, quite naturally, is dependent upon the enthusiasm with which the project is undertaken and also will control its success or failure.

One other possible approach has been splendidly demonstrated through the efforts of W. H. Walker, M.D., of Eskridge, Kansas. He completed this program for all schools in Wabaunsee County, undertaking it as a project of the Eskridge Kiwanis Club. It could be duplicated by any service club in other cities. The project requires no expenditure of funds, is easily administered, and carries with it not only a public relations value to the sponsoring agency but great community and individual service.

### Distribution of Physicians

The so-called Kansas Plan for providing rural areas with physicians has been in operation for several years. During this period, some definite results have been noted. In the years 1900 to 1942, the latter being selected as the last year prior to the war, small towns were consistently losing doctors. There are instances of communities supporting five in 1900 that had none in 1942. During the period of 1948 to 1950, 69 physicians located in Kansas communities of 1,500 population or less. This represents the first reversal of a trend that had been in progress for 50 years.

The Kansas Plan of providing rural areas with medical care is far from completed, but considerable progress has been made. Many smaller communities have provided hospital facilities and office space for physicians, more often than not without the use of federal funds, and shortly thereafter found a doctor. It is significant, if not surprising, that before long the physician felt the necessity to have a second doctor to help him. There are already instances of a third coming to a community which a few years ago had no resident medical care. Therefore, even

though there are still many areas that can well support a physician, and even though many more physicians will be welcomed by the medical profession and by the communities involved, the principal factors of the first phase of the problem have been solved.

Repeating again for the purpose of emphasis, many more doctors are needed, but Phase II is already becoming apparent and some concerted action will be needed to cover this portion of the problem. Many communities in this state are asking for medical care which, for one or more reasons, could have better medical attention through the use of a doctor in a neighboring town. A blunt if not altogether accurate condensation of this problem might be made as follows: It is only logical that any scarce commodity or service should be utilized with maximum efficiency. A doctor's maximum efficiency is reached in the hospital. Therefore, his services can best be utilized if patients come to him. The smallest towns require that he spend much of his time in a car visiting farm homes in the surrounding area, therefore will use a doctor at less than the best service of which he is capable. It follows then that there are areas in which two additional doctors in a larger town with a well equipped hospital can serve the two outlying communities more efficiently than if they located in these smaller places.

To prevent the possibility of misunderstanding on this point, this plan might be repeated in other words. Under a free enterprise system the doctor, like the lawyer or hardware merchant, will locate where he wishes to go. The Kansas Medical Society will certainly never attempt to prevent a doctor from locating in any small community. It is believed, on the other hand, that if some of the smallest of these towns that are located near larger cities would cooperate as districts in obtaining medical care, they can find a more efficient and a more economical solution than to build a competing hospital and attempt to support a resident doctor.

In the interest of providing medical care of high quality within easy access to all persons of the state, the above can represent a solution which is both practical and possible of attainment. Modern transportation and paved roads bring the doctor, 30 miles from the rural resident, as close as the average doctor is to the family living at the edge of our larger cities. This is stated crudely and only in part and represents an outline of what should be Phase II of the Kansas Plan. Ideally it consists of having all people in the state understand how the services of a physician may best be utilized. In that way they will obtain the most service at least expense for themselves, and the physician will be rendering the greatest benefit with the least loss of time.



## Research at K. U. Medical Center

Within a few weeks a most attractively prepared booklet describing the research projects at the University of Kansas School of Medicine will be available for distribution. This book is beautifully illustrated and well written to give a brief but concise description of what is being done in research at this school.

The book is prepared for public consumption. It is in no way scientific or is it intended to be. By way of example, it lists cancer as one of the areas in which research is being conducted and states in one short paragraph that information is needed in the fields of early diagnosis and new methods of treatment. The pamphlet discusses the high cost of research and makes a dignified and conservative suggestion that the public is permitted to assist by donating money to these departments.

Upon completion a copy of this book will be mailed to each physician in Kansas with the recommendation that it be placed in his waiting room. It is hoped that each doctor will give some care to the book when it arrives so that it may continue to be read by patients in the waiting room.

## Vocational Rehabilitation

A committee to assist in vocational rehabilitation in the state was recently appointed by Dr. C. H. Benage, president of the Kansas Medical Society. The following were named as members: Dr. O. W. Davidson, Kansas City; Dr. Dwight Lawson, Dr. Ralph R. Preston, Dr. John L. Lattimore and Dr. W. L. Beller, Topeka; Dr. John A. Grove, Newton; Dr. John M. Porter, Concordia; Dr. Murray C. Eddy, Hays; Dr. G. R. Hastings, Garden City; Dr. John B. Jarrott, Hutchinson; Dr. Conrad M. Barnes, Seneca; Dr. H. H. Jones, Winfield; Dr. E. A. Smiley, Junction City; Dr. Haddon Peck, St. Francis; Dr. N. E. Melencamp, Dodge City; Dr. A. L. Ashmore, Wichita.

The state rehabilitation service assists the disabled of Kansas to become employable by offering vocational counsel and guidance, physical restoration, training, tools and supplies, placement, and follow-up. The duties of the Professional Advisory Committee will be to review the physical restoration work, and to establish fee schedules for medical and surgical treatment, hospitalization, and artificial limbs. The committee will also recommend to the rehabilitation service policies concerning physical restoration and will act as liaison between the medical profession and other groups interested in rehabilitation services.

The rehabilitation of the handicapped is a subject of great interest to the medical profession, and

many physicians have cases to be referred to the rehabilitation service. Arrangements for service and requests for speakers for county medical society meetings should be addressed to Rehabilitation Service, 908 Topeka Boulevard, Topeka, Kansas.

## Student Journal to be Published

The first issue of the *Journal of the Student American Medical Association*, a 72-page publication, will be published in January as the official organ of the Student American Medical Association organized a year ago.

The journal will be issued nine months of the year, omitting July, August, and September. It will be sent to 26,191 medical students and approximately 7,000 interns.

The space will be about equally divided between editorial and advertising copy, with editorial material including scientific and socio-economic articles, a news letter, information on new pharmaceuticals, equipment, and instruments, book reviews, a question and answer section, editorials, and feature stories.

## Club of "Guinea Pigs" Formed

Using the tentative name of the "Guinea Pig Club," a group of scientists met recently in Chicago to formulate an organization which will be comprised of human "guinea pigs." Membership will be limited to medical scientists, students, technicians, and volunteers who have ever served in any way as human test material.

The plans are to formally organize chapters in each medical center throughout the country. The purpose of the organization is for education, and at each meeting papers will be presented describing experiences and results of test service. Citations or some form of honorary recognition for outstanding volunteer service will be presented. Another activity of the group will be to publicize the codified rules now in effect for the conduct of experimental procedures on human beings.

Suggestions on politics, program, and organization details will be welcomed. Communications may be sent to the National Society for Medical Research, 185 North Wabash Avenue, Chicago 1, Illinois.

## Cancer Grant to K. U.

The University of Kansas School of Medicine last month was given a grant of \$27,635 for the evaluation and development of serodiagnostic tests for cancer from Public Health Service funds allocated by the National Cancer Institute. The work will be conducted under the direction of Dr. R. E. Stowell and Dr. J. H. Hill.

## Case Reports from the University of Kansas Medical Center Tumor Conference\*

### Exfoliative Cytology in the Diagnosis of Cancer

Edited by R. E. Stowell, M.D., and D. M. Gibson, M.D.\*\*

Most authorities agree that the diagnosis of malignancy by exfoliative cytology is a valuable adjunct when used in connection with other diagnostic methods. The following three cases will show some of the benefits to be derived from, and the pitfalls to be avoided in, the cytologic diagnosis of cancer.

#### Case No. 51-95

J. W., a 66-year-old man, was admitted to the University of Kansas Medical Center on August 18, 1951, with a history of anorexia, weight loss of 25 pounds and a feeling of fullness in the upper abdomen and chest for two months. He had noticed some associated dyspnea and orthopnea. The patient's left chest had been tapped on two occasions 6 and 10 weeks previously with removal of much bloody fluid, said to contain malignant cells. He has been constipated for one to two years, but has had no other gastrointestinal symptoms. He has developed a slight cough during the last two months but has had no hemoptysis.

The patient was not in acute distress. There was dullness to percussion in the entire left chest; the right chest was essentially negative. All cardiac dullness was heard behind the sternum and in the right chest.

Urinalysis showed a slight trace of albumin and a few hyaline casts with 0-2 red blood cells and 0-4 white blood cells per high power field. Complete blood count, blood chemistry, total and fractional proteins and gastric analysis were within normal limits. The electrocardiogram showed left ventricular strain.

A bronchoscopy done on August 20, 1951, showed no abnormalities. Four successive thoracenteses were performed, with the removal of 5,400 cc. of bloody fluid. The patient was discharged on August 24, 1951.

Dr. Dunham: Roentgenograms of the chest taken on admission reveal a massive left pleural effusion. Following thoracentesis, in addition to a hydro-pneumothorax, a vague pulmonary mass is seen anteriorly. Intravenous pyelograms show definite distortion of the calyces of the left kidney, suggesting a renal tumor. The gastrointestinal series was negative except for sigmoidal diverticuli.

Dr. Pollak: Smears of the pleural fluid show

large numbers of bizarre cells, containing large hyperchromatic nuclei and prominent cytoplasmic vacuoles. These cells (Figure 1) were regarded as being malignant cells, probably from a primary carcinoma in the gastrointestinal tract.

Dr. Firminger: Special stains, such as the periodic acid-Schiff and mucicarmine stain, would confirm the presence of mucin in these cells.

Dr. Helwig: Do you think these could be metastatic cells from a renal cell carcinoma?

Dr. Pollak: That possibility certainly can't be eliminated, but the general impression was that the cells were probably metastases from an adenocarcinoma of the gastrointestinal tract.

Dr. Helwig: This man had convulsions that antedated the chest symptoms. Renal cell carcinoma frequently metastasizes to the lung and the brain. Dr. Williamson, do you think this patient has metastases to the brain?

Dr. Williamson: This man had typical epileptic seizures for seven years, which had not changed since the onset of his present illness. The neurological findings were completely negative. The con-

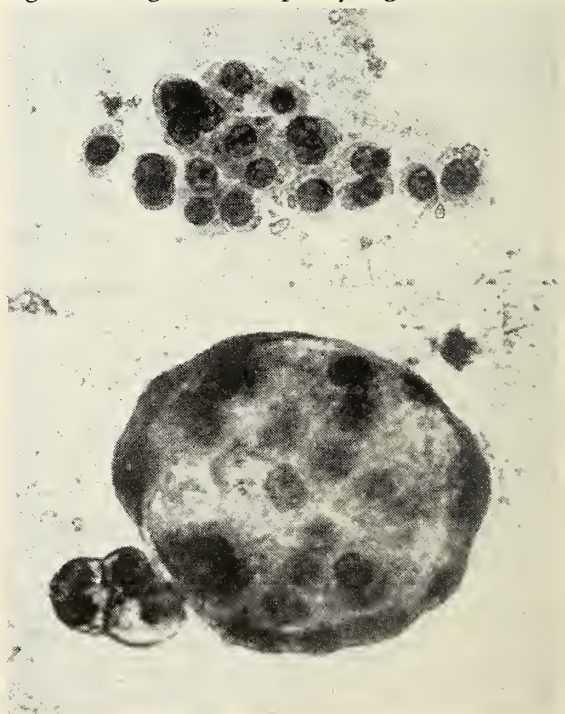


Figure 1. Groups of malignant cells in sputum from Case 51-95. The larger group represents an acinus of cells.

\*Cancer teaching activities aided by a grant from the National Cancer Institute, U. S. Public Health Service.

\*\*Damon Runyon Clinical Cancer Research Fellow.



vulsions were always nocturnal and subsided with medication. In addition, one brother and one nephew have epilepsy. For these reasons, we considered the convulsions to be completely unrelated to malignancy, either primary or secondary.

Dr. Kittle: I recall a case similar to this in which malignant mucoid containing cells in the pleural fluid were subsequently shown to be due to a primary carcinoma of the lung, which could not be demonstrated by bronchoscopy. I think a primary carcinoma of the lung should certainly be considered in this case.

Dr. Johnson: A series of examinations of stool specimens for occult blood is a useful method of screening for gastrointestinal cancer.

Dr. Helwig: Some success has also been obtained from surface smears of the colon following a cleansing enema.

There have been several series of cases, including that reported by Alexander,<sup>1</sup> of patients with renal carcinoma and other malignancies with solitary lung metastasis, who have had a long arrest of the disease following removal of the primary tumor and resection of the solitary metastasis.

There have also been quite a number of cases of renal cell carcinoma in which solitary bone lesions have been removed and patients have done well for some time. The peculiar tendency of hypernephromas to yield a solitary metastasis is well known. A hypernephroma is the first thing to consider with a solitary metastasis in the lung. It is important to remember that a secondary pulmonary lesion may also invade a bronchus. I have seen three such cases in recent years. So the fact that a main bronchus is invaded does not mean that the patient must have a primary bronchial lesion.

In summary, this is the case of a man with malignant cells in the pleural fluid. The diagnostic question is, where is the primary tumor. The final diagnosis is not yet available, but one must strongly consider a primary focus in the kidney, lung or gastrointestinal tract. In this regard, an excellent clinical impression to remember is that bloody pleural fluid in an afebrile patient in the cancer age is due to cancer until proven otherwise.

#### Case No. 51-96

P. I., a 35-year-old man, was admitted to the University of Kansas Medical Center on June 17, 1951, with the chief complaint of fullness in the stomach and moderate dyspnea which began one month before while swimming. This gradually became worse and two weeks ago he consulted a local doctor. He was told that he had fluid around his heart and hospitalization was recommended. A pericardial tap was done and 50 cc. of sterile fluid was removed.

He immediately felt better, but the fluid returned and a second tap was done in two weeks with little relief. The day before admission the patient had a temperature of 101.6°. Review of symptoms reveals a sensitivity to novocain and sulfa drugs.

Physical examination of the chest revealed equal expansion bilaterally and percussion dullness posteriorly from the fourth rib downward. Vocal fremitus and breath sounds were decreased over the left posterior chest. The area of cardiac dullness extended into the axilla.

Urinalysis revealed a trace of albumin with many mucus threads. The red blood count was 5.9 million, the white blood count 8,000 and hemoglobin 15.6 grams. The differential count was normal. The blood non-protein nitrogen was 42.5 mg. per cent, creatinine 1.4 mg. per cent, sugar 83 mg. per cent, sodium 142 milliequivalents, potassium 4.7 milliequivalents, chloride 104 milliequivalents. Histo-plasmin skin test was positive. Agglutination test for *B. tularensis* was positive, 1:20. Three successive blood cultures grew *B. subtilis*.

The patient was placed on dihydrostreptomycin because of the positive blood cultures. Pericardial tap on June 12, 1951, revealed numerous clumps of poorly outlined cells with large vesicular nuclei that showed considerable variation. These were initially regarded as being metastatic adenocarcinoma cells.

On July 9, 1951, an exploratory thoracotomy was performed and the pericardial sac was explored. Approximately 600 cc. of bloody fluid was aspirated from the pericardial sac. Along the course of the anterior descending branch of the left coronary artery there were four or five small nodules varying from one-half to one cm. in size. Because of the relation to the coronary artery, these nodules were not biopsied.

Because of the possibility that the patient had periarteritis nodosa, he was given ACTH, and showed marked improvement. The left hydrothorax and the hydropericardium improved on ACTH and antibiotic therapy and the patient was discharged improved on August 9, 1951.

Dr. Dunham: Roentgenograms taken on admission show a hypertrophied heart. There is also an opacity in the left base that may be interpreted as fluid and pulmonary edema. No cardiac pulsation was noted, which is consistent with pericardial effusion. Subsequent films showed decrease in heart size and feeble pulsations, as well as moderate fluid in the left pleural cavity.

Dr. Pollak: The pericardial fluid showed numerous large clumps of cells, many of which show moderate variation in the size and shape of the nuclei. There is also some variation in the intensity

of staining, and a few large cytoplasmic vacuoles are present. This was first considered as metastatic adenocarcinoma to the pericardium. Dr. Kerr reviewed the smears and felt that these were reactive mesothelial cells, and not malignant cells.

A biopsy of pericardial tissue removed at operation shows groups of cells similar to those seen in the smear. They are iron-containing mesothelial cells grouped in sheets, nests and anastomosing cords. Some of these cells show bizarre size, shape and staining.

Dr. Allen: This case was quite a diagnostic problem from a clinical standpoint. The most important feature was a persistent pericardial effusion in a young, husky, afebrile individual. The positive blood cultures were only obtained in the broth and never in the plates, so this was discounted.

We were faced with the problem of doing exploratory surgery on the patient or giving him x-ray therapy on the assumption that he had a pericardial malignancy. When we learned that the suspected malignant cells in the pericardial fluid were actually non-malignant mesothelial cells, we decided the patient should be explored.

At operation, the nodules that were seen surrounding the coronary arteries were identical to those present in a patient who died at this hospital last year with widespread lesions of periarthritis nodosa. We had included periarthritis nodosa in the differential diagnosis of a patient with bloody pericardial fluid but had never given it serious consideration.

An interesting feature is that this patient raised turkeys. Exploring the possibility of an occupational disease, we learned that a disease of turkeys sometimes produces nodular lesions on the heart, but there is no record of such a condition having occurred in humans.

With the presumptive diagnosis of periarthritis nodosa, the patient was treated with ACTH. He responded very well and is now well, working every day and still raising turkeys.

#### Case No. 51-97

J. F., a 64-year-old white man, was admitted to this hospital on August 8, 1951, and expired on August 18, 1951. He had been perfectly well until four months prior to his admission, at which time he first complained of weakness and fatigue. Two months before his admission he developed a cough, which was productive of a large amount of whitish sputum, and some pain in the lower portion of the right chest. He developed shortness of breath about one month prior to admission, and noted reddish sputum for the first time.

Physical examination revealed inspiratory and ex-

piratory moist rales and rhonchi over the right lower lobe of the lung and an area of dullness in the posterior right chest. The remainder of the physical examination was essentially negative. The blood pressure was 130/80 and his pulse rate on admission was 80.

Urinalysis showed three to four red blood cells and eight to nine white blood cells per high power field. Blood counts and chemistry were within normal limits. The electrocardiogram shows partial right bundle block and a rate of 140. P waves were large and resembled those found in right or in auricular hypertrophy or dilatation.

The patient became much more dyspneic on the fifth hospital day and there was a marked tachycardia with a rate of 140. He was digitalized the following day but failed to respond. The patient was treated symptomatically. The chest became completely filled with rales, the volume of bloody sputum which he produced became much more marked, and he went into shock and died.

Dr. Dunham: Chest roentgenograms reveal multiple, confluent, poorly defined masses scattered diffusely throughout both lung fields. Pulmonary adenomatosis, although a rare lesion, should be considered in the differential diagnosis, as should lymphogenous spread of a metastatic carcinoma, and an unusual mycotic infection. Gastrointestinal series and pyelograms were negative.

Dr. Boley: Examination of the sputum specimens reveals many groups of cells showing variation in nuclear size and shape and irregular clumps of chromatin. There is some cytoplasmic vacuolization. These are definitely malignant cells.

Dr. Helwig: Dr. Delp, will you discuss this patient from a clinical standpoint?

Dr. Delp: This patient presented signs and symptoms of marked pulmonary insufficiency, probably primary, and cardiovascular disease, probably secondary. The history made it obvious that this was not an acute cor pulmonale (pulmonary disease secondary to embolization), nor did the condition resemble a chronic cor pulmonale, for ventilatory and pulmonary symptoms were absent prior to the onset of the acute illness.

Chronologically, at least, the patient would fall into the category of sub-acute cor pulmonale. This is a term intended to encompass those patients who have pulmonary disease secondary to metastatic lesions in the lung. With diffuse lymphogenous spread of the malignancy, the pulmonary vessels and bronchi are encroached upon, with resultant decrease in ventilation and increase in pulmonary pressure, resulting in cor pulmonale.

Coccidiomycosis and histoplasmosis should be



considered in the differential diagnosis, as should pulmonary adenomatosis, but I thought metastatic carcinoma the more likely.

Our efforts were directed toward trying to discover the location of the primary lesion in a patient who was in critical condition throughout his hospital stay.

Dr. Helwig: As this patient was followed to necropsy, may we have the autopsy findings?

Dr. Boley: At autopsy this patient had a primary malignancy in the lung, apparently of multicentric origin. The cells of the tumor nodules line the alveolar walls. These cells are tall columnar in type and show considerable variation in size. The lesion is present in the hilar lymph nodes. No primary focus has been discovered in the bronchi or in any other part of the body, so we are evidently dealing with an alveolar cell tumor of the lung.

Dr. Helwig: Dr. Kerr, will you discuss the diagnosis of malignancy by cytologic technics?

Dr. Kerr: Exfoliative cytology is a valuable adjunct to tumor diagnosis. Exfoliated cells may be examined from chest fluid, abdominal fluid, vaginal secretions, bronchial secretions, collections of urine, or material from ureteral catheterization. This procedure is not new, but has been in use for many years. Fluid may be centrifuged, and the sediment may be made into paraffin blocks, or the fluid may be examined by smearing it on a slide. Another technic is the sponge biopsy introduced by Gladstone,<sup>2, 3</sup> in which a gelfoam sponge is placed over a lesion, as used to obtain bronchial or gastric secretions. The smear or sectioned sediment may be stained with a variety of technics, depending on individual preference. I prefer the Papanicolaou stain because it gives better nuclear detail.

One important thing to remember, illustrated by the second case, is that any inflammatory reaction involving a serous surface will produce reactive changes in the lining mesothelial cells, so that they may appear bizarre and atypical. Mesothelial cells may be seen in glandular arrangement occasionally, secondary to inflammation. It is amazing that these atypical mesothelial cells are not regarded as being malignant cells more often. Saphir<sup>4</sup> has described the marked atypia that may occur in non-malignant cells in various body cavities.

The cells seen in the pleural fluid in the first case are definitely malignant cells. I think it would be impossible to eliminate a primary carcinoma of the lung in this case, because mucoid carcinoma is not too uncommon in the lung. The tumor may be primary in any structure originating from the primitive gut tube, because these cells are all potentially capable of producing mucin.

In examining various body fluids, I think it is advantageous to study both smears and embedded sediment from each case. Although both are similar in a fair percentage of cases, occasionally one may be considered positive and the other negative. We should use every method at our disposal in attempting to arrive at a definite diagnosis.

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## ACTIVITIES OF MEMBERS

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Dr. Karl Menninger and Dr. R. C. Anderson, Topeka, were invited by Governor Stevenson of Illinois to attend a meeting in Springfield last month to plan improvements for the Illinois state hospital system.

\* \* \*

Dr. J. P. Haigler, Hays, was principal speaker at a meeting of the Western District of the Kansas Society of Medical Technologists held in Hays last month. His subject was "The Leukemias."

\* \* \*

Dr. Howard Snyder, Winfield, spoke at a convention of the Kansas Federation of Licensed Practical Nurses, October 18 and 19.

\* \* \*

Dr. Ernst T. Morch, assistant professor of surgery at the University of Kansas Medical Center, presented a paper on "Geriatric Anesthesia" at the International Gerontological Congress in St. Louis recently.

\* \* \*

Dr. Mary T. D. Glassen, Phillipsburg, was one of the speakers at a conference held in Wellington last month by the Kansas Congress of Parents and Teachers.

\* \* \*

Dr. Francis X. Lenski, Jr., Iola, is now attending postgraduate courses at the Cook County Graduate School of Medicine, Chicago.

\* \* \*

Dr. D. V. Conwell and Dr. C. J. Kurth, Wichita, attended a meeting of the Central Neuropsychiatric Association in Minneapolis, Minnesota, October 19 and 20.

\* \* \*

Dr. Philip W. Morgan, Emporia, was elected president of the Kansas Heart Association at a meeting held in Emporia last month. Dr. Lee H. Leger, Kansas City, was named president-elect.

Dr. T. H. White, who has been associated with the Student Health Department at Kansas State College since 1946, has entered private practice in Manhattan in association with Dr. Darrel L. Evans.

\* \* \*

Dr. J. J. Hovorka, Emporia, was guest speaker at a Plymouth community meeting last month, giving a talk on cancer.

\* \* \*

Dr. Paul H. Lorhan, of the University of Kansas Medical Center, was one of the instructors at a refresher course given by the American Society of Anesthesiologists, Inc., in Washington, D. C., November 5-7. His subject was "Geriatric Anesthesia."

\* \* \*

Dr. Ray T. Parmley, Wichita, was named an associate examiner of the American Board of Anesthesiology recently. The board met in Memphis, October 14-17.

\* \* \*

Dr. Forrest L. Loveland, Topeka, has been named a consultant for the Southwestern Bell Telephone Company's employees' benefit committee.

\* \* \*

Dr. Franklin D. Murphy, chancellor of the University of Kansas, was speaker at a meeting held in Overbrook, November 2, to open a drive for funds for a medical clinic.

\* \* \*

Dr. A. E. Hiebert and Dr. H. W. Brooks, Wichita, were speakers at the September meeting of the Sedgwick County Medical Assistants' Society.

\* \* \*

Dr. Frederic B. Emery, Concordia, recently became a diplomate of the American Board of Surgery.

\* \* \*

Dr. E. J. Ryan, Emporia, addressed the Lyon County Practical Nurses Association recently on the subject of "Glands."

\* \* \*

Dr. Paul Brenneman, Hesston, left October 3 for Puerto Rico to spend two years at the La Plata Mennonite Hospital under the direction of the Mennonite Relief Committee.

\* \* \*

Dr. Harold Bullock, Independence, discussed a proposal to build a tuberculosis sanatorium in south-east Kansas before the Lions Club in Independence recently.

\* \* \*

Dr. H. L. Galloway recently began his 41st year in the practice of medicine in Anthony.

\* \* \*

Among speakers at the annual one-day program

of the Kansas Chapter of the American College of Surgeons, held at Hays in September, were Dr. Paul W. Schafer of the University of Kansas Medical Center, Dr. Irene Koenke of Halstead, Dr. J. D. Colt of Manhattan and Dr. W. E. Grove of Newton. Dr. Colt was named president of the society and Dr. Orville R. Clark, Topeka, was elected secretary.

\* \* \*

Dr. Charles R. Svoboda, Chapman, gave an instruction on first aid to bus drivers for the Dickinson County Community High School recently.

\* \* \*

Kansans elected to office in the Kansas University Medical Alumni Association, at a meeting held in Kansas City last month, are: Dr. Robert Maxwell, Wichita, and Dr. Charles Underwood, Emporia, vice presidents; Dr. Mervin Rumold, secretary-treasurer; Dr. William Algie, chairman of the nominating committee. Dr. Franklin D. Murphy was speaker at the meeting.

\* \* \*

A paper by Dr. John K. Fulton, Wichita, "Bronchial Asthma from a Therapeutic Point of View," published in July in the Journal of the Kansas Medical Society, was abstracted in the October issue of the Digest of Ophthalmology and Otolaryngology.

\* \* \*

Dr. Howard E. Snyder, Winfield, was guest speaker at a meeting of the Sedgwick County unit of the American Cancer Society held in Wichita last month.

\* \* \*

Dr. C. J. Kurth, Wichita, lectured on psychiatric therapy at the October meeting of the Sedgwick County chapter of licensed practical nurses.

\* \* \*

Dr. Edward H. Hashinger, acting dean of the University of Kansas School of Medicine, led the discussion on postgraduate education at a meeting of the Association of American Medical Colleges at French Lick Springs, Indiana, October 29.

\* \* \*

Dr. Ralph B. Earp, El Dorado, has announced plans to retire after having practiced for 53 years.

\* \* \*

Dr. LeRoy A. Calkins, chairman of the Department of Obstetrics and Gynecology at the University of Kansas Medical Center, was installed as president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at a meeting held recently in Hot Springs, Virginia.

\* \* \*

Dr. Donald R. Davis has discontinued practice in Olathe to begin a three-year residency in surgery at the Mayo Clinic, Rochester, Minnesota.



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(The Council on Pharmacy and Chemistry of the American Medical Association has adopted the following statement of Actions and Uses and of Dosage for publication in connection with a description of Banthine Bromide for inclusion in New and Nonofficial Remedies)

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Methantheline bromide is indicated for clinical use whenever anticholinergic spasmolytic action is desired, provided it is not contraindicated because of its atropine-like characteristics or because of a patient's intolerance to the unavoidable side effects of such therapy. It is useful as an adjunct in the management of peptic ulcer, chronic hypertrophic gastritis, certain less specific forms of gastritis, pylorospasm, hyperemesis gravidarum, biliary dyskinesia, acute and chronic pancreatitis, hypermotility of the small intestine not associated with organic change, ileostomies, spastic colon (mucous colitis, irritable bowel), diverticulitis, ureteral and urinary bladder spasm, hyperhidrosis or control of normal sweating which aggravates certain dermatoses, and control of salivation.

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therefore should not be administered to patients with glaucoma. It sometimes decreases the ability to read fine print. Xerostomia (dryness of the mouth) is a common, sometimes transient, side effect. Urinary retention of varying degree may occur in elderly male patients with prostatic hypertrophy, and some patients may have difficulty emptying the rectum. Patients with edematous duodenal ulceration may experience nausea and vomiting during initial administration of the drug. These patients should take only liquids during the institution of drug therapy. All patients should be advised of the possible occurrence of side effects. Overdosage sufficient to produce a curare-like action may be counteracted by prompt subcutaneous injection of 2 mg. of neostigmine methylsulfate.

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Dr. Stanley Friesen and Dr. Mahlon H. Delp, members of the faculty at the University of Kansas Medical Center, were among the speakers at a meeting of the Missouri Academy of General Practice held in October.

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## COUNTY SOCIETIES

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A meeting of the Wilson County Society was held at the Coffee Shop, Fredonia, on October 18. Guests for the evening were Mrs. Margaret Foster, Topeka, and Mrs. Linda Gowan, Caney, representatives of Blue Cross-Blue Shield, who announced plans for a community enrollment campaign in November. The society voted to assist in the campaign.

\* \* \*

The Wyandotte County Society met at the city-county health center in Kansas City, October 16. The program was presented by two guest speakers. Dr. C. J. Brown, Jr., showed colored pictures to illustrate oral-facial trauma, and Dr. Harry Statland spoke on "Endocrinology—Facts and Fallacies."

\* \* \*

Dr. and Mrs. C. W. Wilson, St. Francis, entertained 38 members of the Northwest Kansas Medical Society and Auxiliary at St. Francis on October 14. The physicians held an afternoon meeting at Dr. Wilson's office, and the speaker, Dr. S. E. Blandford, on the staff of the University of Colorado Medical School, discussed "Injuries and Infections of the Hands." Four new members were added, Dr. K. L. Knuth of Atwood, Dr. Glenn Martin of Goodland, Dr. B. Dan Ferguson of Bird City and Dr. Johnson of Norton.

\* \* \*

Members of medical societies in the first councilor district held a joint meeting at Hiawatha, October 16, with 65 physicians and their wives attending. Dr. W. L. Anderson, Atchison, councilor of the district, presided. Dr. C. H. Benage of Pittsburg, president of the state society, spoke on "The Year's Objectives for the Medical Society," and Dr. Lucien R. Pyle, Topeka, discussed the work of the Volunteer Advisory Committee.

\* \* \*

The Wilson County Society and its Auxiliary held a joint dinner meeting at the Emerald Room, Neodesha, on September 19. A business session was held later at the home of Dr. J. W. McGuire, and Dr. Glen McCray, Neodesha, was accepted as a new member.

\* \* \*

Members of the Shawnee County Society met with dentists, pharmacists and representatives of pharmaceutical houses at White Lakes Country

Club, Topeka, October 1. An informal dinner meeting was held.

\* \* \*

A quarterly meeting of the Central Kansas Medical Society was held recently at the Ellsworth Country Club. Two guest speakers from Kansas City presented the program. Dr. Clarence Francisco spoke on "Common Orthopedic Problems," and Dr. George Herrman discussed "Rh Factor in Erythroblastosis and Exchange Transfusions."

\* \* \*

Dr. Gerald B. Pees, Iola, was elected president of the Southeast Kansas Medical Society at a meeting held recently in Pittsburg. Dr. Eugene Myers, Iola, was named secretary.

\* \* \*

A meeting of the Sedgwick County Society was held at the Allis Hotel, Wichita, October 9. Speaker of the evening was Dr. H. R. McCarroll, St. Louis, was discussed "Office Orthopedic Practice."

The 25th annual golf and skeet tournament of the society was held September 21 at Rolling Hills Country Club and the Wichita Gun Club. Dr. E. S. Edgerton won the president's trophy for golf, and Dr. F. F. Nyberg won the trophy for marksmanship.

\* \* \*

A film on gastrointestinal cancer was shown at a meeting of the Butler County Society held in El Dorado, October 8. The society presented a gold key to Dr. F. F. Lemon, Douglass, who has completed 50 years in the practice of medicine, the third member of the group to achieve that record.

\* \* \*

The Cowley County Society met October 18 at the Arkansas City Hospital. Dr. H. O. Anderson, Wichita, discussed two subjects, "Common Foot Troubles" and "Rehabilitation of the Hands."

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### New Faculty Members Appointed

Seven appointments to the faculty at the University of Kansas Medical Center were announced recently.

Dr. Leland D. Stoddard, formerly on the staff of Duke University School of Medicine, was named assistant professor of pathology and oncology. Appointed as instructors were Dr. Mary C. Colglazier, medicine; Dr. Nicholas Hotton, III, anatomy; Dr. Irene Cutter Keeling, pediatrics; Dr. William L. Mundy, medicine; Dr. John R. Patterson, pediatrics. Dr. Irving Kaas was named assistant instructor in medicine.

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## Senior Thesis from the University of Kansas Medical School\*

## Acute Pulmonary Edema

A. Dean Burnett\*\*

Kansas City, Kansas

**DEFINITION:** Pulmonary edema, a form of edema affecting the lungs, consists of an escape of fluid through the walls of the lung vascular tree into the interstitial tissue, the alveoli, and the bronchial tree.

Acute pulmonary edema is marked by rapid onset, rapid flooding of the lung alveoli with a serous or serosanguinous fluid, copious expectoration, and imminent asphyxia. To quote Henneman,<sup>1</sup> "Its non-specific name has led to confusion with cardiac asthma, paroxysmal dyspnea or paroxysmal nocturnal dyspnea and chronic pulmonary edema. Cardiac asthma is constantly associated with heart disease; ancillary signs of congestive failure and asthmatic wheezes throughout the chest are usually present. Paroxysmal dyspnea . . . usually appears at night and seems to be the same as cardiac asthma except for the associated bronchial constriction. Chronic pulmonary edema is found in congestive heart failure and the condition is rarely characterized by the explosive onset often found in acute pulmonary edema."

A clinical description of acute pulmonary edema by Lewis<sup>2</sup> is as follows: "The onset . . . occurring usually at night and waking the patient from sleep; or it may come in the hours of daylight and wakefulness . . . In frank pulmonary edema, while breathlessness is usually urgent from the start, cough is more prominent, and frothy blood-stained fluid is freely or profusely expectorated. The march of events is often speedy. Cyanosis deepens rapidly; breathing becomes progressively more urgent and less effective. The attack may last at its height for hours. In fatal attacks the pulse becomes steadily weaker until imperceptible, the veins swell, and breathing becomes more gasping, less frequent, and then weaker until it ends.

"In fulminating form, the edema occurs so rapidly and is so intense that, within a minute or two of crying out in fear, the patient is drowned by the copious blood-stained fluid that pours into the respiratory passages and overflows frothing from the mouth and nose."

**INCIDENCE:** There is no satisfactory report on the incidence. However, Farber<sup>3</sup> states that acute pulmonary edema is one of the frequent causes of death found at autopsy in infants and children.

**PATHOLOGY:** The lungs at autopsy are heavy, water-logged, and pit on pressure. When incised, large amounts of clear or bloody-colored fluid exude from the cut surface. Histologically, the capillaries are dilated, and most of the alveoli are filled with an almost homogenous pinkish material. A few large hemosiderin-containing mononuclear cells may be present. The edema fluid contains protein, the concentration of which may be two to three per cent.

**GENERAL CONSIDERATION OF FACTORS AS REGARDS ETIOLOGY AND PATHOGENESIS:** The multiplicity of the causes which give rise to attacks of lung edema and the theories attempting to explain it are evidence that no one explanation offers an adequate mechanism accounting for all acute pulmonary edema attacks.

*Structural arrangements in the lungs* are significant in the development of pulmonary edema. (Portions of the following paragraphs relating to this aspect have been taken from Drinker<sup>4, 5</sup> and are presented herein with revision.)

In visualizing the capillary mesh of the lung, one should consider it overlaid on both sides by a delicate layer of extremely thin alveolar epithelium. It is the meat of a vital sandwich of which the enclosing outer layers are so thin as to be inconsequential in restraining diffusion of gas or of fluid from the capillaries. The vascular area provided by this net is maximally great, and the fall in pressure between pulmonary arterioles and capillaries is in propor-

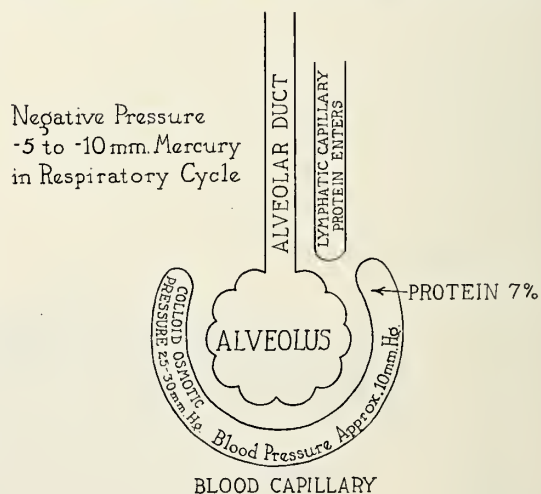


Fig. 1- Schematic Representation of the Lung Structure

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\*Senior Student, University of Kansas School of Medicine.



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tion. Arteriolar constriction might alter the distribution of lung blood to a degree, but in such a net as surrounds the alveoli, capillary reactions are minimal in regulating blood flow.

An important feature of the diagram in Figure 1 concerns the lymphatic system. Wherever lymphatics are found in the body, their principal function is the carrying off of small amounts of protein that have left the blood capillaries. Lymph vessels are distributed over the surfaces of the arteries, veins, and bronchi. However, their ends do not reach into the walls of the alveoli or surround alveoli as commonly thought, but stop as blind terminals in the walls of the alveoli ducts. Thus the ultimate saccular radicles of the lymphatic tree terminate just before the beginning of the largest portion of functional respiratory lung tissue.

This means that the alveoli septa must become turgescient with edema fluid before the lymphatics can be entered. So it seems possible that excess fluid filtered out of the lung capillaries can enter the alveoli air space about as readily as it can spread inside the alveoli tissue toward the lymphatic capillaries located at the beginning of the atria.

Furthermore, the arrangement of lymph channels for delivering their contents into the blood is curiously inadequate. All the lymph from the lungs, except a very small amount from the upper part of the lung, empties into the right subclavian vein by way of the right lymphatic duct, which is usually a short tube of not more than one millimeter inside diameter. This vessel is an astonishingly small bottleneck at the delivery end of a reservoir for accumulating fluid.

*Mechanical factors* play an important role in the dynamics of the lungs. The accompanying figure shows a capillary containing blood with a normal plasma protein content of approximately seven per cent. This protein exerts an osmotic pressure—the colloid osmotic pressure of the plasma of 25 to 30 mm. of mercury. In most systemic capillaries this force, which attracts water into the vessels, is opposed by the capillary blood pressure of about the same magnitude derived from the left ventricle. Consequently, a balance of forces controls movements of water and dissolved salts through the capillary endothelium.

In the lungs, the colloid osmotic pressure attracting water is necessarily 25 to 30 mm., but opposing capillary blood pressure is lower, 10 mm. being a fair value. However, the negative intrathoracic pressure exerts suction upon the walls of the blood capillaries. This pressure is  $-10$  mm. in normal inspiration, and during heavy breathing may be  $-70$  mm. A forcible expiration readily overcomes

the negative intrathoracic pressure normally remaining at full expiration and may give rise to a positive pressure of 80 mm. Also at each normal inspiration, pressure in the trachea becomes negative ( $-3$  mm.) and this effect extends through the bronchi into the alveoli. Obviously, under normal breathing there is an element of suction conducive to filtration in terms of 5 to 10 mm. This wipes out much of the balance for retention and absorption of water inherent in a system in which there is capillary pressure of 10 mm. opposing colloid osmotic pressure of 25-30 mm. With lung tissue and its aeration wholly normal, mechanical conditions producing significant capillary leakage do not occur.

In 1878 Dr. W. H. Welch conducted a series of experiments in which he produced pulmonary edema by compression of the left ventricle or auricle and by the thoracic aorta.<sup>6</sup> From this came the cornerstone of the mechanical theory of pulmonary edema. This theory assumes that through a heightened pressure of blood within the pulmonary circuit, fluid is squeezed into the tissues of the lung and out into the alveoli and bronchi. Other workers were unable to substantiate Welch's findings.

There have been numerous experiments concerned with the production of pulmonary edema by ligation of all or part of the pulmonary veins, by selective damage to the right ventricle or left auricle or ventricle, by ligation of the aorta below the diaphragm, and by ligation of the arch of the aorta with and without opening the thorax. These experiments indicate that pulmonary edema is *not* due simply to pulmonary hypertension.

Several investigators have proved that the severest grades of pulmonary edema might exist clinically and be produced experimentally without any evidence of increased pressure in the pulmonary circuit. Luisada<sup>7</sup> and Henneman<sup>1</sup> both refer to an editorial appearing in the *British Medical Journal* in 1941 which stated that as experimental and clinical observations on pulmonary edema had accumulated, it had become clear that the validity of the "back-pressure" or "left ventricular failure" theory of acute pulmonary edema could no longer be considered as established. Paine and Smith, writing in 1949, claim that evidence at hand provides no certain clue as to the mechanism of acute pulmonary edema from failure of the myocardium, and that pulmonary congestion alone does not appear to be the precipitating cause.<sup>8</sup>

However, Turnoff and Schnabel, writing in the 1951 edition of the *Cyclopedia of Medicine, Surgery, Specialties*, state, "Diminished cardiac output and renal retention of sodium and water, occurring in patients with failure of the left-sided chambers, is



# 50 and Four

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the basis for pulmonary congestion. Sudden intensification of the engorgement leads to paroxysmal dyspnea, cardiac asthma, or acute pulmonary edema. Although not exclusively nocturnal in its appearance, acute edema at times develops as a transition from paroxysmal dyspnea or cardiac asthma by the production of massive lung edema and the rapid exudation of copious quantities of plasma into the interstitial tissue, the alveoli and the bronchial tree."<sup>9</sup>

Posture must be considered among mechanical factors which may be involved in the production of acute pulmonary edema. Perera and Berliner undertook a study "to see whether shift of body fluid to the blood stream, following rest in the horizontal position, could be correlated with the time of onset of paroxysmal dyspnea and might therefore be considered a factor in inducing acute left-sided heart failure." In their discussion of the study, they point out that "serum protein concentrations are considerably altered in health and disease by changes in position and muscular activity, that the decrease in serum protein concentration appears to be the result of hemo-dilution due to an increase in plasma volume, and that the close correlation between nocturnal hemo-dilution and attacks of paroxysmal dyspnea suggests that an increase in plasma volume is an important factor in the production of acute left-sided failure in individuals with organic disease."<sup>10</sup>

*Drug, chemical, and inbalant factors* should be considered. Acute pulmonary edema caused by adrenalin in animals shows notable similarities to that in humans. It occurs suddenly, is characterized by dyspnea, hypertension, tachycardia, and it soon causes the same rose-colored froth at the mouth and nose of the animals and similar alterations of the lungs. Henneman summarizes a systematic study done by Luisada on rabbits to determine the dosage of adrenalin necessary to kill the animals with acute pulmonary edema. Using such doses and even giving 50 per cent more adrenalin, many animals could be saved by a complex mixture of certain drugs. These drugs probably depress central nervous system centers. In adrenalin-produced pulmonary edema, the significant factor is supposedly the effect of hypertension—not a general or a pulmonary hypertension but rather aortic hypertension to a small degree and carotid and cephalic vessel hypertension to a larger degree. This hypertension activates a reflex arc that determines the sudden increase in the permeability of the pulmonary vessels and the consequent pulmonary edema.<sup>1</sup>

Johnson describes several experiments on rabbits with the chest open in which acute edema of the

lungs did not occur following injection of adrenalin in doses that would normally produce edema were the chest closed. Presumably, alteration of the difference in pressure between external air and the air in the lungs was significant. He states that because of peripheral vaso-constriction and subsequent rise in systemic blood pressure, there results an obstruction to the circulation of the blood on the left side of the heart, but not on the right. This eventually leads to an over-distention of the capillaries of the lungs with blood. If the capillaries distend widely enough, the blood fluids escape through the capillary walls into the alveoli of the lung and edema is thus established.<sup>11</sup>

Paine and Smith point out that pulmonary edema following exposure to gaseous and parenteral toxins has raised the possibility of a toxic mechanism in the pathogenesis of lung edema. Newton concludes in experiments on cat heart-lung preparations that the pulmonary edema which occurred was primarily due to a toxic activity of the blood which was used. He states that in the pulmonary circulation it causes a rise in arterial pressure; the significance of this may be only as an index to a simultaneous toxic action upon the capillaries.<sup>12</sup> Other workers have suggested that the lung edema frequently occurring in shock is due to the action of an "H substance" carried to the lungs from the site of injury.

Experimental pulmonary edema has occurred following ingestion of potassium iodide, iodoform, histamine, and pilocarpine; by intravenous injections of chlorine water, prussic acid, amyl nitrite, and methyl salicylate; and after administration of thiourea and derivatives thereof.

Certain of the industrial gases and other substances that may cause pulmonary edema are: oxides of nitrogen, phosphorus oxychloride, phosphorus pentachloride, phosphorus trichloride, methyl bromide, chlorine, cadmium, and dust from specific alkaloids. Non-industrial toxins have been blamed in cases of alcoholism, from the effects of venoms and muscarine, and after administration of barbiturates, iodine, morphine, and prostigmine.

*Anoxia* is a recognized factor. Drinker states "It is generally acknowledged that two factors are fundamental in causing abnormal transudation in the lungs and pleural sacs. They are, first, sustained increase in pulmonary capillary pressure and, second, anoxia." He also remarks that when a tissue becomes anoxic, the capillary bed becomes larger and that often dilatation is accompanied by increased permeability, so that edema occurs. Increased pressure in the pulmonary capillaries does not readily cause recognizable pulmonary edema *unless* coupled with heightened permeability, most frequently due to anoxia.





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1. Smiles, William J.: Long Acting Heparin Preparation: A Useful Adjunct in Anticoagulant Therapy. U. S. Armed Forces Med. J., Vol. II, No. 1 (Jan.) 1951.

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Drinker further states that despite evidence purporting to show it, there is no reason to believe that the capillaries possess active powers of contraction and dilatation as is the case with many of the systemic vessels. This does not mean that their diameter does not change, nor that at times there are capillaries that are not conducting blood that may later be filled by a moving current. "These changes are, I believe, passive and depend on variations in the output of the right ventricle or a rise in pressure in the pulmonary veins." The lungs must meet the needs of the body when the cardiac output is only four liters a minute and also when it rises abruptly even to 30 liters.

The lungs, being larger than necessary to meet the resting needs of the body, often allow functional disruption of much lung tissue to proceed for a long time with quiet persistence, but without apparent disablement—a fact which too often leads to unhappy eventuality.

Think of one of the commonest clinical experiences—a patient safely in bed with a moderate degree of cardiac decompensation. There is little cause for alarm, a trifling dyspnea, slight cyanosis, and moderate edema of the lower part of the body. Yet, with respect to the lungs, this patient is getting oxygen through only a part of his lung tissue—a part which remains normal while other large sections filling with fluid cease to function. Even with removal of a lobe or an entire lung, the patient manages to carry on his respiratory functions well enough to live a reasonable life. He cannot shift suddenly into violent muscular effort, but he can be a relatively normal person if his physical activities are kept within bounds. However, what Meltzer called his "margin of safety" is gone. This is a fundamental conception for clinicians—the conception of the existence of protective mechanisms so beautifully ordered that doctors rarely realize how often they gamble upon safety margins.<sup>5</sup>

That the lung capillaries do not dilate adaptively as a result of the oxygen lack does not exclude them from the effect of anoxia—namely, increased permeability—and anoxia does make these vessels leak abnormally. It is an outstanding feature of oxygen lack that where it occurs "anoxia begets anoxia" and such is the striking case in the lungs.

*Neurogenic factors* play a role. Daly cites experiments demonstrating a rise in pulmonary arterial pressure following stimulation of the peripheral ends of the cut thoracic nerves from D2 to D7.<sup>13</sup> He refers to "the existence of functionally active pulmonary vasomotor nerves" and makes the general statement that "there is evidence of the existence of functionally active pulmonary vasoconstrictor fibers which appear to be adrenergic in character and also

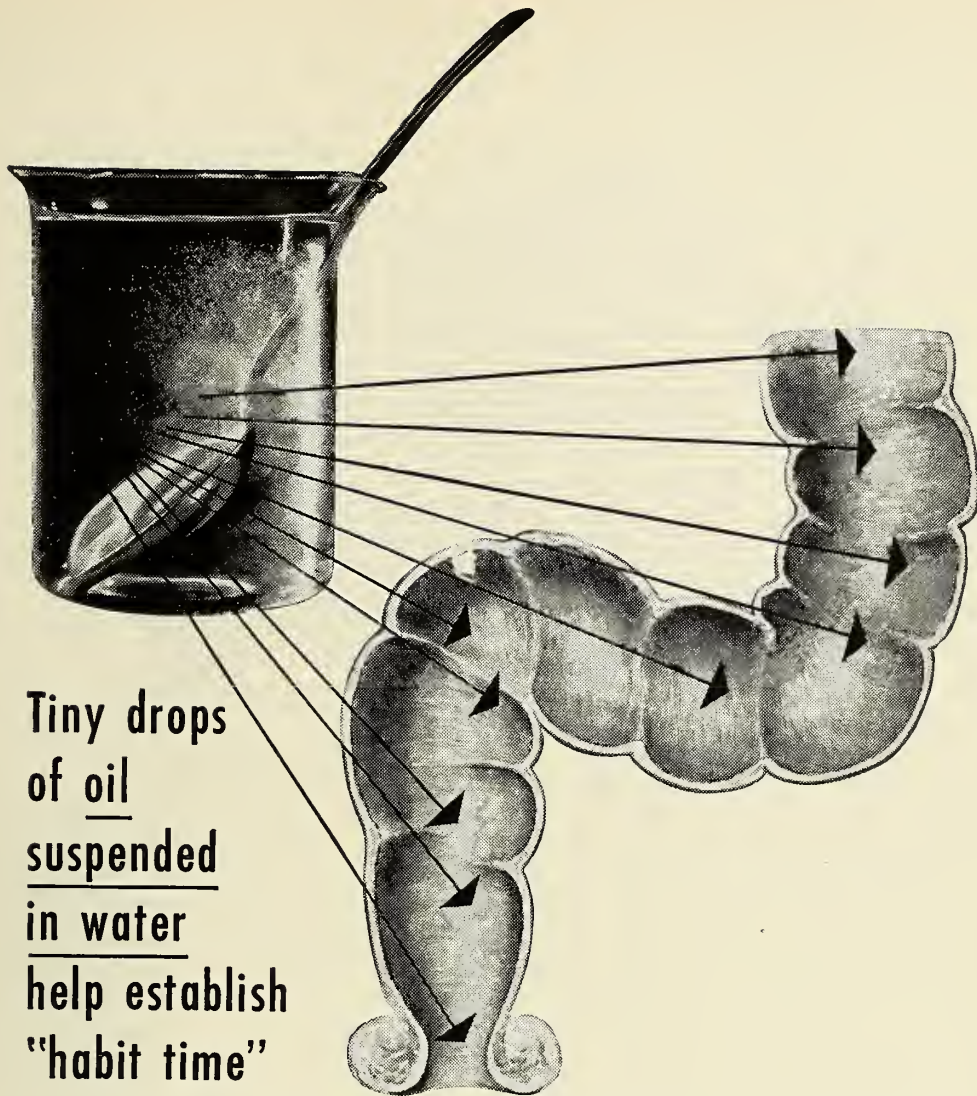
of pulmonary cholinergic vasodilator fibers." It would seem that the action of the pulmonary vasoconstrictor fibers is more easily demonstrated than that of the vasodilator fibers.<sup>14</sup>

Farber reports that bilateral cervical vagotomy in rabbits soon leads to death, usually within 8 to 24 hours, from pulmonary edema. He concludes such changes are brought about by a combination of factors secondary to bilateral vagotomy among which are loss of the vagal innervation of the lungs and possibly laryngeal paralysis. He states that "loss of the power of pulmonary vasoconstriction deprives the pulmonary vessels of a mechanism necessary in the adjustment of pulmonary vascular dynamics." He also remarks that it appears that both the sympathetic and the vagal systems exert a control over the pulmonary and bronchial vessels. Experimental evidence suggests that neuropathic pulmonary edema in man is caused by disturbances, either central or peripheral, to the vasomotor control of the pulmonary vessels, resulting in one type of acute pulmonary edema on a neurogenic basis.<sup>14</sup>

Henneman cites the experiments of several workers who have produced pulmonary edema in animals by stimulation, injury, or extirpation of various nerves of the central and autonomic nervous systems. He states "merely mechanical and humoral factors on the heart and lungs cannot cause experimental pulmonary edema, which always occurs via a nervous mechanism, as in that produced by adrenalin and by ligation of the aorta. It is possible to cause pulmonary edema by modifying only the circulation of the head, and this is determined by a hypertension in the cephalic vessels. It is possible to cause pulmonary edema by electric stimulation of the nervous pathways."

Luisada<sup>15</sup> presents the neurogenic theory as follows: "According to this concept the attack is the result of acute congestion of the pulmonary vessels followed by transudation in the alveoli. The immediate cause of this condition is an intense stimulation of the vasodilator nerves of the lungs due either to a lesion of the nerve centers or to reflexes arising in the various viscera. The pulmonary edema in persons with skull injuries, with subarachnoidal hemorrhage, and with poliomyelitis is included in the first class, as the lesion is central. The pulmonary edema of drowning people, and, to a partial extent, that of soldiers subjected to war gases, should be included in the second class, as reflexes arising in the mucosa of the larynx, of the trachea, and of the bronchi seem to be the main causes of the attack. A multiple reflex probably occurs in hypertensive patients where the nerve receptors of the aortic arch, the carotid sinus, and of the heart wall are excited by distention. A simpler reflex causing typical at-





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tacks may occur in the stimulation either of the heart receptors (acute ischemia as in coronary occlusion) or receptors of the esophagus and of abdominal organs."

*Other factors and conditions relating to pulmonary edema* are of interest.

**Drowning.** Luisada states fluid found in the lungs of drowned persons and animals has a high protein content and must result from escape of serum into the alveoli, i. e., pulmonary edema.

**Paracentesis.** Edema has been described following thoracic or abdominal paracentesis. In 1943 Vidal et al reported contralateral pulmonary edema was provoked by creation of an extrapleural pneumothorax.

**Uremia.** Acute pulmonary edema has been observed frequently during the course of uremia. It rarely occurs, however, in pure epithelial nephritis. One worker believes that the pulmonary edema of renal disease is due to accompanying cardiac weakness.

**Pregnancy and toxemia of pregnancy.** Certain authors have stressed the importance of the relationship between pregnancy and pulmonary edema in some cases.

**Central nervous system damage or disease.** Weisman and Master report edema and congestion of the lungs have developed to a severe degree immediately after an intracranial hemorrhage.<sup>16, 17</sup> The following have been cited also as causes of pulmonary edema: insulin hypoglycemic coma, brain tumor, head wounds and trauma, diseases of the peripheral vagus nerve, acute ascending myelitis, tetanus, cerebral embolism and thrombosis, vertebral injuries, encephalitis, polyneuritis and polyradiculitis, tabes dorsalis, lumbar puncture, phrenic-nerve crush under local anesthesia, cervical sympathectomy, laminectomy, emotional disorders, and hysteria.<sup>1, 18, 19</sup>

**Infections.** The following are regarded as having initiated pulmonary edema: acute rheumatic fever, puerperal fever, typhoid fever, measles, scarlet fever, and whooping cough.

**Cardiovascular diseases.** Cardiovascular diseases in which pulmonary edema may occur are: aortic regurgitation, aortitis, angina pectoris, coronary thrombosis, pericarditis, mitral stenosis, cardiac failure, hypertension, infarction, wounds of the heart, and cardiac aneurysm.

**Miscellaneous.** Pulmonary edema has been reported in association with or initiated by: coitus, shocking news, allergy, thyroid storm, epileptic seizures, beriberi, gout, reflexes from internal organs during operations, distention of abdominal organs, shock, intravenous injections of muscarine, iodine, bile salts, burns, intestinal obstruction, and manipulation of stellate ganglia. Burford and Burbank,<sup>20</sup>

in an interesting article entitled "Traumatic Wet Lung," report they have observed two fundamental physiologic phenomena with regard to chest wounds:

1. That in all wounds of the chest to a greater or lesser degree depending upon the type and severity of the lesion, the lung tissue reacts to produce more than its normal amount of interstitial and intra-alveolar fluid.

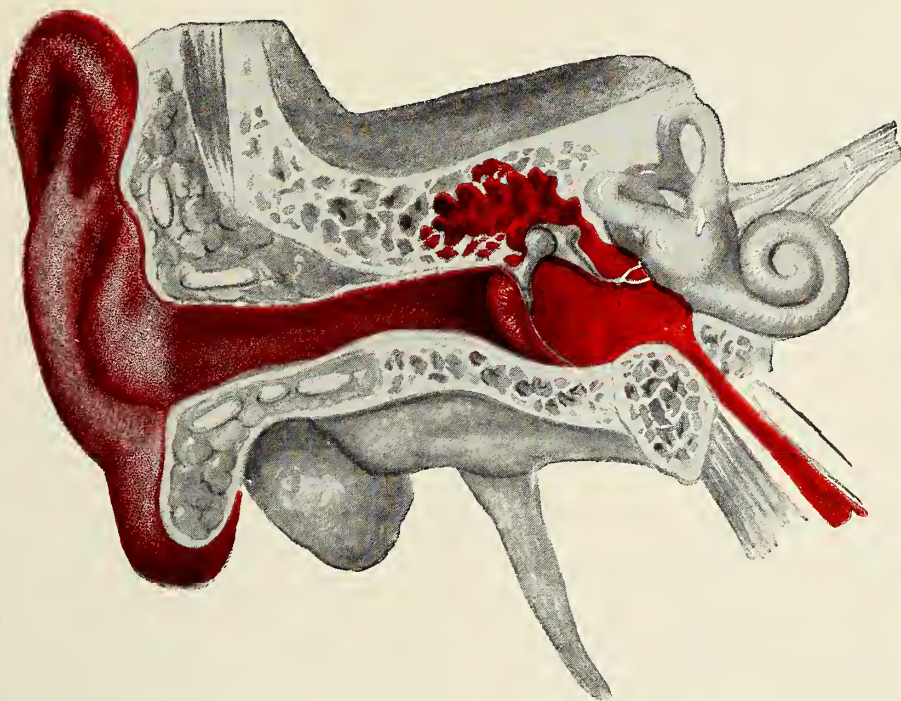
2. That in all wounds of the chest the bronchopulmonary tree not only has more fluid to rid itself of, but becomes less capable of doing so.

They state that the result of these two phenomena may be the factor upon which the outcome of the patient's life will depend. (For their recommended treatment, see under THERAPY.)

**SYMPTOMS AND SIGNS:** An attack of acute pulmonary edema may occur at any time. Restlessness, weakness, dry non-productive cough, and precordial oppression may precede the attack. If this occurs at night, a nightmare usually precedes it. The onset may awaken the patient from sleep with breathlessness usually urgent from the start. Cough becomes prominent and frothy blood-stained foamy fluid is freely or profusely expectorated. This fluid may attain a volume of 500 cc. or even 1000 cc. within 30 to 60 minutes. Vomiting may occur. Frequently there is profuse sweating, paroxysms of suffocation with cyanosis, and urinary incontinence. The sequence of events may occur within a very short interval, with cyanosis rapidly becoming more marked and breathing progressively more urgent and less effective. In a fulminating form, the edema may be so intense and of such rapid onset that within a few minutes after crying out in fear, the patient "is drowned by the copious blood-stained fluid that pours into the respiratory passages and overflows frothing from the mouth and nose."

The physical findings characteristic of this condition are the presence of numerous coarse bubbling rales throughout the lungs and feeble heart sounds. The rales vary markedly, from the minute alevolar rales to the gurgling sounds caused by the foam in the trachea. The alveolar rales are frequently more abundant at the bases. The pinkish frothy blood-stained fluid which may pour from the mouth or be rapidly expectorated is practically pathognomonic. Except in attacks which are connected with myocardial infarction (usually) and mitral stenosis (sometimes), the pulse is full and rapid, and the blood pressure is normal or high, the latter frequently being higher than before the attack. The temperature remains normal during the attack but may be elevated following it (due to reabsorption of proteins from the lungs). The blood NPN may be increased. This increase may last two to three





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days even in patients without apparent renal lesions.

The duration of an attack of pulmonary edema is variable, lasting from but a few minutes to several hours. The end of the attack is marked by a decrease in the amount of sputum and rapid improvement in the general condition of the patient. Rales in the chest may be detected afterwards for minutes to hours in some cases, and there is no correlation between their presence and the suffering of the patient.

Luisada<sup>21</sup> would classify the attacks as follows:

Abortive P. E.—the entire attack lasts only a few minutes.

Fulminating P. E.—the patient dies before a physician is called or during transportation to the hospital.

Prolonged P. E.—this type usually is connected with myocardial infarction. The attack may last from many hours to many days.

Unilateral P. E.—this is extremely rare. It usually is associated with pathology of one lung or a unilateral lesion of the nervous system.

**ROENTGENOLOGIC FINDINGS:** Nessa and Rigler<sup>22</sup> in discussing the x-ray picture of pulmonary edema refer to the classic butterfly-shaped, fairly symmetrical density of both lungs. This is greatest at the hilus and gradually fades out toward the periphery; the apexes and extreme bases may be clear. The density is homogenous and obliterates all structural detail in the lung. The fluid collects in groups of alveoli, resulting in an irregular stippled density on the roentgenogram. Often the edema is predominantly on one side or entirely unilateral. The condition is distinguished from pulmonary congestion by the presence of enlarged hilar shadows and dilated vessels throughout the lung fields. It is further distinguished from a massive atelectasis in which there is elevation of the diaphragm, shift of the mediastinum and collapse of the chest wall. Lateral films reveal the congestion and edema to be central and not peripheral, in contrast to the congestion in pneumonia, which is usually peripheral in onset. According to Burford and Burbank, x-ray findings may be completely absent even in the presence of marked auscultatory moisture.

**THERAPY:** Opinions vary as to proper therapy for this condition as would be expected considering the confusion that exists regarding the cause(s) of the condition.

Naturally, followers of the heart-failure theory advocate drugs stimulating the myocardium, vasomotor center, peripheral arteries, carotid sinus and respiratory center—such as digitalis, ouabain, strophanthin, camphor, Coramine, caffeine, metrazol, and ether.

Sedatives and narcotics are recommended by most clinicians to depress the central nervous system, the autonomic nervous system, and smooth-muscle fibers of the vessels—such as morphine, phenobarbital, chloritone, chloral, atropine, and papaverine. And as Henneman points out, the foregoing implies a belief in a neurogenic theory. Luisada suggests that in some ways the sedative drugs are antagonistic to the stimulants and that therefore, if the one group is used, the other should not be.

The action of the stimulating drugs is regarded as so complex that their use is objectionable even when the theory of left ventricular failure is accepted.

Among mechanical procedures are those designed to lessen pulmonary congestion or to improve oxygenation of blood. Therefore venesection, application of tourniquets, and positive pressure respiration may be employed. Drinker recommends the administration of oxygen. He states that the reasons why there is still too little use of oxygen are (1) failure to realize that anoxia is essentially progressive and that it is not used until the physician is sure that the patient needs it, by which time he has incurred a handicap that is usually insurmountable. "The time to begin to use oxygen is before there is any certainty it is needed." And (2) the present methods for administering oxygen are expensive and inefficient. He recognizes that there is no drug that gives such great subjective relief and valuable rest in dyspnea as does morphine, but points out that this drug dampens the respiratory center and thus promotes anoxia. He therefore advocates the use of oxygen with morphine to allow all possible benefit from the sedative effect without the progression of anoxia.

He concludes that the two principles that the laboratory has learned are the master words in oxygen therapy: anoxia begets anoxia, and if real benefit is to be expected from oxygen, it should be used before the need is certain.

Harrison<sup>23</sup> states that when seizures are relatively mild, no treatment is required other than assumption of the upright position and administration of codeine to control cough. (The presence of wheezing indicating cardiac asthma is usually an indication for aminophylline, which may lessen dyspnea even when the obstructive component is not obvious. The usual dose is 0.5 gm. (7½ gr.) administered either intravenously over a five-minute period or by rectum when dyspnea is mild. When the rectal route is employed, sodium theophylline glycinate ("Glytheonate") appears to be more effective and better tolerated, the usual dose being 0.8 gm. (12 gr.) as a suppository.

Among the drugs that have been found valuable



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are: morphine, especially in patients with pain; phenobarbital in cases with central nervous system lesions and no abnormality of blood pressure; and papaverine in patients with coronary occlusion. Luisada concludes that chloretone, chloral, sodium phenobarbital, papaverine hydrochloride, atropine sulfate, and morphine sulfate may safely be injected intravenously, and that during the acute attack digitalization and stimulants should be avoided. He states that "intravenous injection of either chloral hydrate or phenobarbital in combination with morphine gives the best result. Atropine should be avoided unless bradycardia is present."

His therapy for the prevention of attacks includes: digitalis for subacute insufficiency of the heart; morphine subcutaneously, in addition to atropine and phenobarbital, following skull trauma, since patients usually develop pulmonary edema six to twenty-four hours after injury; and opium and belladonna by mouth in cases of recurrent pulmonary edema. He also suggests chloral hydrate by mouth or by rectum, phenobarbital, and aminophylline as good prophylactic therapy.<sup>21</sup>

Luisada remarks that some of the drugs which are useful in certain types of pulmonary edema might be detrimental in others. Morphine, barbiturates and chloral are advocated in cardiac patients but are not advocated in pulmonary edema following injury to the central nervous system because of their depressing action on the nerve centers. Intravenous strophanthin might cause ectopic rhythms in pulmonary edema following coronary occlusion. Venesection, mercurial diuretics, spinal anesthesia, and possibly morphine should not be used in pulmonary edema accompanied by shock because they further reduce venous return and cardiac output. Oxygen under pressure may not be well tolerated by patients with emphysema.

According to Burford and Burbank, the time-honored method of controlling thoracic wall pain in traumatic injury to the chest wall has been adhesive strapping and the generous use of morphine which they claim is a physiologically unsound approach. They state while morphine, by raising the pain threshold makes the patient less aware of pain, it actually diminishes the cough reflex and does not aid in the establishment of a painless cough mechanism. When adhesive strapping is used, the existing anoxia is further increased by limitation of the motion of the chest wall. In addition, it is an actual handicap to the propulsive mechanism of cough. Accordingly, the therapy which they propose is abolition of pain and physiologic remobilization of the chest wall. Temporary intercostal nerve block and thoracic paravertebral sympathetic nerve block are suggested. In some patients so flooded with

bronchopulmonary secretion and so exhausted by their trauma, tracheobronchial catheter aspiration may be employed.

The use of antifoaming agents in the therapy of paroxysmal pulmonary edema is of interest. Luisada states it has been known for a long time that fairly large amounts of fluid may be tolerated in the respiratory passages as long as no foam is formed. When the latter develops, increased volume of the air-fluid mixture and modified physical properties lead to severe effects by blocking the small bronchi. The stability of a foam is based upon the character of the air-fluid interface, namely on the surface tension of the fluid, and any substance capable of modifying the surface tension in such a way as to decrease the foam, is called an anti-foaming agent. In experiments performed on rabbits in which a series of anti-foaming agents were administered by inhalation in order to decrease the severity of pulmonary edema caused by a standard dose of intravenous adrenalin, poorly volatile drugs (heavy alcohols, Span 85) failed to exert any favorable effect. However ethyl alcohol exerted an important favorable action, due to the anti-foaming property of alcohol; its action on the central nervous system, though slight because of the small dose used, may have enhanced the effect. The favorable effect of alcohol was comparable to that of morphine. Combination of morphine by injection with alcohol by inhalation gave excellent results, equivalent to those obtained by morphine plus oxygen under pressure. The inhalation of alcohol vapor in animals with pulmonary edema induced by other methods than by intravenous adrenalin gave striking results, entirely preventing the development of pulmonary edema in some instances. Clinical treatment with alcohol by inhalation is now being tried.<sup>21, 24</sup>

For the benefit of those who are faced with the problem of treating acute attacks of congestion and edema of the lungs, and dyspnea, the following paragraph is quoted from Harrison:<sup>23</sup> "In the case of a severe seizure, energetic therapy is life-saving. Morphine should be employed in large doses (15 to 30 mg.) in young and middle aged adults, but should be used with caution in the elderly, and in persons with impairment of hepatic function. In the younger subjects with very severe dyspnea, the intravenous route is to be employed. Venesection (about 500 ml.) should be carried out immediately and may need to be repeated in desperate cases. Venostasis (trapping blood in the legs by the applications of pressure cuffs to the thighs) is likewise useful. Oxygen is urgently indicated. Digitalis in the form of rapidly-acting *Digitalis lanata* ("Cedilanid," 0.8 to 1.2 mg.) or strophanthin (ouabain) should be administered intravenously to



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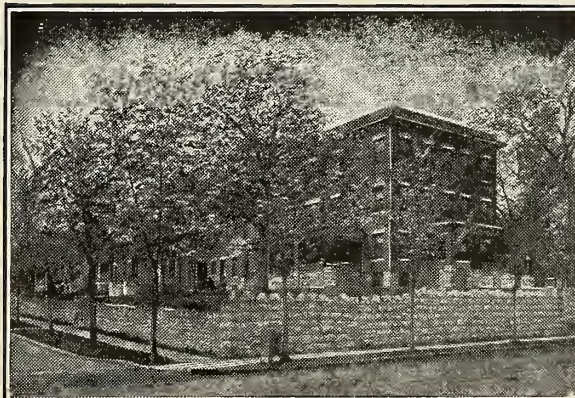
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### Summary

No one explanation offers an adequate mechanism accounting for all acute pulmonary edema attacks.

Increased pulmonary tension, lowered concentration of serum proteins (which may result in hemodilution from assumption of supine position), increased pulmonary capillary permeability, and anoxia are causative factors of the condition.

The termination of the lung lymph vessels in the walls of the alveolar ducts and not in the alveolar walls, and the questionable adequacy for drainage by the right lymphatic duct are significant factors.

Chemical substances, drugs, inhalants, trauma, and the stimulation of various nervous reflexes associated with the pulmonary vascular tissues play a role.

The symptoms and signs consist of sudden onset of dyspnea, cough, expectoration of frothy blood-stained fluid, the presence of numerous coarse bubbling rales throughout the lungs, and feeble heart sounds.

Roentgenologically, acute pulmonary edema is characterized by the butterfly-shaped, fairly symmetrical density of both lungs which is greatest at the hilus and gradually fades out toward the periphery.

The therapy consists of the use of morphine, oxygen, venesection, venostasis, and digitalis.

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## BOOK REVIEWS

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*Practical Clinical Psychiatry. Seventh Edition. By Edward A. Strecker, Franklin G. Ebaugh, Jack R. Ewalt and Leo Kanner. Published by the Blakiston Company, Philadelphia. 506 pages, 35 figures, 14 tables. Price \$7.00*

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The tablet material (2 gm. equivalent to 30.8 grains Doraxamin) was added to 150 cc. artificial gastric juice and stirred at 37 degrees C. Every 10 minutes there was removed 20 cc. of the mixture which was replaced by 20 cc. of fresh artificial gastric juice. At regular intervals the pH of the mixture was determined with a Beckman pH meter.

## References:

- 1 Krantz, Kibler and Bell: "The Neutralization of Gastric Acidity with Basic Aluminum Aminoacetate," J. Pharmacol. and Exper. Therap., 82:247 (1944).
- 2 Paul, W. D., and Rhomberg, C.: "Medical Management of Uncomplicated Peptic Ulcer," J. Iowa M. Soc. 35:167-85 (1945).
- 3 Holbert, J. M., Noble, Nancy, and Grote, I. W.: J.A.Ph.A., Scientific Edition, 36:149 (1947).
- 4 Holbert, J. M., Noble, Nancy, and Grote, I. W.: J.A.Ph.A., Scientific Edition, 37:292-294 (1948).

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Karl J. Waggener, M.D.

Wendell T. Wingett, M.D.

faults, I feel, is the lack of clear, differential diagnosis. This book I highly recommend for individuals who are beginning their introductory phase into the broad field of psychiatry, for it serves as a good stepping-stone to further reading in psychiatric literature.—E.E.B.

\* \* \*

*The Changing Years.* By Madeline Gray. Published by Doubleday and Company, New York. 224 pages. Price \$2.75.

This is an honest effort to present in understandable form the bodily changes responsible for "menopausal symptoms." Too much time and detail are spent on certain phases of these changes, but on the whole the book should have definite value for the doctor in management of some of his patients complaining of "the change," since it can be used to supplement his verbal remarks.—R.L.N.

\* \* \*

*Review of Physiological Chemistry. Third Edition.* By Harold A. Harper. Published by University Medical Publishers, Palo Alto, California. 260 pages, 13 figures. Price \$3.50.

This book is an excellent, up-to-date, and concise outline of the subject of biochemistry, written principally as a supplement to standard texts. It is not sufficiently detailed for use as a text in medical biochemistry, but might conceivably be used for shorter courses in this subject. It might be used to advantage by the physician or basic medical scientist for review purposes or by interested non-medical scientists as an introduction to the subject. There is an emphasis on applications in the medical field but discussions of basic ideas are not lacking. Its usefulness could have been enhanced, perhaps, by the inclusion of specific references to the topics discussed. General references to current texts of general biochemistry and to books of special topics in the field are included in the back.

A number of well-chosen illustrations are used and the type and paper are satisfactory. It is well indexed and, hence, might serve as a handbook of the facts and principles of physiological chemistry.—H.J.G.

\* \* \*

*Clinical and Roentgenologic Evaluation of the Pelvis in Obstetrics.* By Howard C. Moloy. Published by W. B. Saunders Company, Philadelphia. 119 pages, 68 figures. Price \$2.50.

This monograph is a good general review of variations in the female pelvis which are of obstetrical significance. The author discusses the mechanism of labor, especially in regard to forceps operation, as related to different pelvic types. He presents his roentgenological method for attempting to predict cephalopelvic disproportion of the inlet and mid-

pelvis. As yet, no satisfactory method for measurement of the fetal head in the breech presentation has been reported.—C.A.H.

---

## ANNOUNCEMENTS

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The U. S. Atomic Energy Commission will offer eight fellowships in industrial medicine for the 1952-1953 academic year, continuing a program begun two years ago. Awards are for one year's academic training at approved institutions. After completion of this training, fellows will be eligible to apply for a second year's in-plant training at one of the major installations of the A.E.C. The stipend for the first year will be \$3,600, plus tuition and laboratory fees, and for the second year, \$5,000.

Applications will be accepted up to January 1, 1952. The address is A.E.C. Fellowships in Industrial Medicine, University of Rochester, School of Medicine and Dentistry, Rochester, New York, Attention: Dr. H. A. Blair.

\* \* \*

The American Urological Association offers an annual award of \$1,000 (first prize of \$500, second prize of \$300 and third prize of \$200) for essays on the result of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to men in training to become urologists. Closing date is February 15, 1952. Complete information may be secured from Dr. Charles H. de T. Shivers, Boardwalk National Arcade Building, Atlantic City, New Jersey.

\* \* \*

The U. S. Navy announced recently that it would make 176 naval hospital internships available to medical school students graduating in 1952. Prospective interns must meet all requirements for a commission and must serve a minimum of 24 months of active duty from the date they start intern training. Application may be made at any time up to January 7, 1952.

Successful appointees will be commissioned lieutenants, junior grade, and will receive pay and allowances in that rank during internship. When ordered to other duty on completion of internship, they will qualify for an extra \$100 per month. Other benefits include a uniform allowance of \$250, transportation for dependents and household effects to duty stations, and opportunities for advanced professional training.

Complete information may be obtained from the Surgeon General of the Navy, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.



## Relationship of Stress to Autonomic Lability

Studies in psychosomatics have shown that functional disorders often are a result of the patient's inability to adjust to emotionally stressful situations (stressor factors).

Nervous tension and chronic anxiety, discharged through a labile Autonomic Nervous System, can cause somatic disturbance.<sup>1,2</sup> Such states may involve any one of the organ systems or several at one time.<sup>1,3</sup> The outline below is designed to relate gastrointestinal and cardiovascular symptomatology to the exaggerated response of the autonomic nervous system.

	Physiologic Effects of Autonomic Discharge	
	Sympathetic	Parasympathetic
Gastro- intestinal System	Hypomotility Intestinal Atony Hyposecretion Reduced salivation	Hypermotility Gastrointestinal spasm Hypersecretion
Cardio- vascular System	Rapid heart rate Peripheral vaso- constriction	Slow heart rate Vasodilatation
Functional Manifesta- tions	Palpitation Tachycardia Elevated blood pressure Dry mouth and throat	Heartburn Nausea-vomiting Low blood pressure Colonic spasm

The data here tabulated is from references 3,4,5,6,7, given below.

When the clinical picture is suggestive of functional disorder, the diagnosis is supported by the presence of the following indications of autonomic lability:

Variable Blood Pressure  
Body Temperature Variations  
Changing pulse rate  
Deviations in B. M. R.  
Exaggerated Cold Pressure Reflex  
Oculo-Cardiac Reflex Abnormalities  
Glucose Tolerance Alterations

Therapy in these cases is directed toward: 1) relieving the somatic disturbance to prepare the patient for psychotherapy\*; 2) guidance in making adjustment to stressful situations and correction of unhealthy attitudes.

\*Drug treatment using adrenergic and cholinergic blocking agents in conjunction with sedatives.<sup>8,9,10.</sup>

1. Ebaugh, F.: *Postgrad. Med.*, 4: 208, 1948. 2. Wilbur, D.: *J.A.M.A.*, 141: 1199, 1949. 3. Williams, E. and Carmichael, C.: *J. Nat'l. Med. Assoc.*, 42: 32, 1950. 4. Goodman, L. and Gilman, A.: *The Pharmacological Basis of Therapeutics*, The Macmillan Co., 1941. 5. Katz, L. et al.: *Ann. Int. Med.*, 27: 261, 1947. 6. Weiss, E. et al.: *Am. J. Psychiat.*, 107: 264, 1950. 7. Alvarez, W.: *Chicago Med. Soc. Bulletin*, 381, 1950. 8. Rakoff, A.: *A Course in Practical Therapeutics*, Williams and Wilkins, 1948. 9. Karnosh, L. and Zucker, E.: *A Handbook of Psychiatry*, C. V. Mosby Co., 1945. 10. Harris, L.: *Canad. M.A.J.*, 58: 251, 1948.

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*Anesthesiology.* Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn. Oral, Memphis.

*Dermatology and Syphilology.* Sec., Dr. George M. Lewis, 66 East 66th St., New York 21. Written, Chicago, March 1952. Oral, Chicago, May 1952. Final date for filing, Feb. 1, 1952.

*Internal Medicine.* Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3.

*Obstetrics and Gynecology.* Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6. Oral, Chicago, June 7-13, 1952. Final date for filing, Feb. 1, 1952.

*Ophthalmology.* Sec. Dr. Ewin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine. Written, Feb. 4-5, 1952, 25 centers. Oral, Oct. 8-13, Chicago.

*Otolaryngology.* Sec., Dr. Dean M. Lierle, University Hospital, Iowa City. Oral, Chicago, Oct. 8-12.

*Pathology.* Sec., Dr. Robert A. Moore, 1402 S. Grand Blvd., St. Louis.

*Pediatrics.* Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

*Physical Medicine and Rehabilitation.* Sec., Dr. Robert L. Bennett, 30 N. Michigan Ave., Chicago.

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*Preventive Medicine and Public Health.* Sec. Dr. Ernest L. Stebins, 615 N. Wolfe St., Baltimore.

*Proctology.* Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

*Psychiatry and Neurology.* Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

*Radiology.* Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

*Surgery.* Sec., Dr. J. Stewart Rodman, 225 South 15th St., Philadelphia. Written, various centers, March 1952. Final date for filing, Dec. 1, 1951.

*Thoracic Surgery.* Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit.

*Urology.* Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16. Chicago, Feb. 9-13, 1952.

The National Federation of Obstetric-Gynecologic Societies has reconstituted itself as the American Academy of Obstetrics and Gynecology. The academy was incorporated on August 4, 1951, and the constitution and by-laws were adopted at a meeting held at Hot Springs, Virginia, on September 5.

The first business meeting of the academy will be held at the time of the meeting of the American Congress of Obstetrics and Gynecology in Cincinnati, March 31-April 4, 1952. The first annual clinical meeting will be held in Chicago during the winter of 1952-1953.

Applications for fellowship may be obtained from the secretary's office, 116 South Michigan Avenue, Chicago 3, Illinois.

\* \* \*

The American Society for the Study of Sterility announces the opening of the 1952 contest for the most outstanding contribution to the subject of infertility and sterility. A cash award of \$1,000 will be given. Essays may be submitted until March 1, 1952. Complete information may be obtained from the society, 20 Magnolia Terrace, Springfield, Massachusetts.

\* \* \*

The tenth annual meeting of the American Academy of Dermatology and Syphilology will be held in Chicago at the Palmer House, December 8-13. In addition to the regular sessions, there will be 36 informal discussion group meetings.

\* \* \*

The American Trudeau Society, medical section of the National Tuberculosis Association, invites the submission of scientific and clinical titles for presentation at its annual meeting to be held at the Hotel Statler, Boston, the week of May 26, 1952. Abstracts limited to 300 words or completed papers will be reviewed by a committee for selection of the most interesting material. Subjects will include all aspects of tuberculosis, non-tuberculous respiratory and cardiac disease, and the results of investigative work with bearing upon these subjects. Material should be sent to the Chairman, Medical Sessions Committee, American Trudeau Society, 1790 Broadway, New York City.

\* \* \*

The National Foundation for Infantile Paralysis announces the availability of a limited number of postdoctoral fellowships to candidates whose interests are research and teaching in medicine and the related biological and physical sciences. The fellowships cover a period of from one to five years. Stipends range from \$3,600 to \$7,000 a year. Complete information on qualifications and applications

may be obtained from Division of Professional Education, National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

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## ABSTRACTS FROM CURRENT LITERATURE

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### Acute Small Bowel Obstruction

*The Management of Acute Small Bowel Obstruction.* By Earle B. Mahoney, Charles D. Sherman, Jr., N. Y. St. Jnl. Med., Feb. 1, 1951.

Only by early recognition of intestinal strangulation whether it is the simple mechanical obstruction (which may be prepared for elective surgery by intestinal intubation and replacement therapy), or the strangulated obstruction (which demands early operation), can the proper management of the patient be handled successfully. It is often difficult to differentiate between these two conditions, but there are certain diagnostic features which are helpful. In the presence of intestinal strangulation, the onset of pain is often abrupt and dramatic, severe and continuous. There are signs of shock and low blood pressure, and peritoneal irritation develops rapidly with tenderness, muscle spasm, and rebound pain. A rapidly rising white blood count is an excellent guide to a serious underlying picture.

The x-ray picture of the abdomen is usually one of the most helpful diagnostic aids in bowel obstruction. Here, when the dilated loops are filled with fluid and gas, shadows form the "ladder" pattern and outline the contour of the dilated bowel. Abdominal paracentesis carefully performed with a small gauge needle is a helpful and safe diagnostic procedure, also.

If diagnosis can be made with certainty that no strangulation exists, the initial phase of treatment is directed toward intestinal decompression and restoration of fluid and electrolyte balance.

The ideal method in intubation is to pass a tube eventually to the point of obstruction. The Miller-Abbott and the Harris mercury-weighted tube are most widely used. The writers prefer the Harris tube. Positioning and passing the tube under the fluoroscope has been one of the most successful ways in which to facilitate the passage of the tube. Some advantages gained by intubation are less trauma to the bowel, postoperative paralytic ileus is minimized, and the patient may be fed an adequate diet.

As soon as the diagnosis of intestinal obstruction has been made, blood should be obtained for chemical analysis. A large amount of chloride is lost by intestinal drainage, and should be replaced by Ringer's solution. Also, a great deal of protein is



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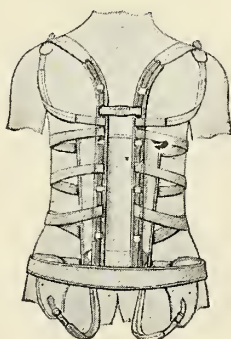
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lost in the dilated bowel, and should be replaced by plasma or whole blood. The loss of potassium in obstruction is probably of clinical significance only in the patient who has had prolonged drainage.

If non-strangulating obstruction is seen early and before marked distention has developed, early operation is preferred. Where there is marked distention, the patient is seen late, or there is no evidence of strangulation, or, if the patient has recurrent adhesive obstruction, then there should be prolonged preoperative preparation. If the site of the obstruction can be localized, transverse or oblique incisions are preferred to longitudinal because of the smaller incidence of postoperative wound disruption. If there is any doubt as to the diagnosis, or any signs of strangulation, then early operation is mandatory.

Often it is difficult to decide whether or not a strangulated segment should be resected. The writers prefer to perform a resection if there is any question about the viability of a segment. The manipulation

of the distended bowel should be avoided as much as possible, and it is usually possible to pick up a collapsed loop and trace it to the point of obstruction. The Noble method of plication in recurrent obstruction is very useful. It would also seem indicated to give all patients chemotherapy, particularly those having closed loops and resections.—J.J.H.

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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

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Volume LII

DECEMBER, 1951

No. 12

## Congenital Toxoplasmosis: A Case In Kansas

Frances Ann Allen, M.D.

Newton, Kansas

*Introduction:* It is perhaps of importance to report a case of toxoplasmosis infection in this area so that physicians generally may be alerted to the fact that the infecting parasite may exist endemically as an infection in the animals of this state. They may therefore form a source of potential infection to the human population of this state.

*Definition:* Toxoplasmosis is an infectious disease caused by protozoa of the genus *Toxoplasma*. It affects both lower animals and human beings. In human beings it occurs in the following three forms:

1. Congenital type—characterized by an encephalomyelitis.
2. Childhood type which is an acute non-suppurative encephalitis.
3. The adult form which is a spotted fever like syndrome associated with atypical pneumonia.

A fourth type has been suggested by Sabin. This form is without symptoms but the patient possesses antibodies against the parasite, and a woman so infected is capable of passing it to her fetus in utero.

*History:* As a distinct genus of protozoa, *Toxoplasma* has been recognized since 1909 when it was differentiated from *Leishmania*. Until 1939 it was thought to infect only certain species of lower animals. In 1939 Wolf, Cowen, and Paige established the existence of human infection of *Toxoplasma* and transmitted the infection from human to animal, then recovered the organisms from the infected animals.

*Incidence:* On June 25, 1948, Dr. J. K. Frenkel, Hamilton, Montana, read a paper on this subject before the Section on Pathology and Physiology at the 97th Annual Session of the A.M.A. in Chicago. He stated that about 35 cases of toxoplasmosis in human beings had been reported to date diagnosed either by autopsy or animal inoculation. Cases of chorioretinitis associated with serologic evidence of toxoplasmosis have been added to these. These cases in both human beings and animals have been reported from all over the world. Pinkerton and

Weinman reported the first fatal case in an adult from Peru in 1940. In 1941 two adult fatal cases were reported in the St. Louis area. Many cases of the congenital type have been reported in the last 10 years from scattered areas all over the world.

*Etiology:* The disease is due to the invasion of the body by the *Toxoplasma gondii* organism, a highly organized protozoan parasite with distinct cytoplasm and nuclear chromatin. The organism derives its name from the Greek "toxon" meaning a bow or arc connoting the lunate shape of the organism, and the specific name *gondii* is derived from the name of the type host, the *gondi*, a small North African rodent, which was used as a laboratory animal at the Pasteur Institute. The protozoan organism reproduces by binary fission. They vary from four to seven microns in length and about two to four microns in width. When young they are crescent shaped with one end pointed and the other slightly rounded. There is no nuclear membrane, and the nuclear chromatin often constitutes about a third of the parasite. As the organism becomes mature it becomes oval or round prior to its fission.

As an aviary strain these organisms infect certain birds. The mammalian strains can infect many types of lower animals, among them dogs, cats, rats, mice, sheep and guinea pigs. Mammals may be infected by the aviary strain, but birds cannot be infected by mammalian strains. The mode of transmission is uncertain. The urine and feces of infected animals may represent a mode of transmission. Spread through mosquitoes and ticks has also been suggested as a means of transmission.

Transplacental transmission takes place when the mother has a primary infection during her pregnancy. *There is no history of a mother's transferring the disease in more than one pregnancy.* Infection prior to pregnancy does not result in transplacental transmission. Also none of the mothers giving birth to toxoplasmic infants had any sign of the disease

other than the presence of toxoplasmic antibodies in the blood. The presence of a pronounced hypersensitivity to *Toxoplasma* after the acute infection makes blood stream dissemination of the organism unlikely.

The parasite is an obligate intracellular organism. It is grown in vitro with great difficulty. It exhibits affinity for all types of fixed tissue cells of the reticuloendothelial system and the parenchyma of various organs.

*Pathology:* After entrance into the human body there is a hematogenous spread. In infants the most frequent site of symptomatic growth is in the central nervous system. In the childhood type this affinity is only slightly less evident. In adults visceral involvement is the rule, the lungs being symptomatically most affected. The parasite invades a fixed living tissue cell, multiplies until the cell membrane breaks, releasing more parasites for further invasion. In the central nervous system the parasitic invasion results in localized necrosis of brain tissue.

In the ependymal cells inflammatory exudate may result in occlusion of the ventricles with resulting internal hydrocephalus. The necrotic areas of the brain tissue subsequently calcify. In addition to necrosis there is often a diffuse inflammatory reaction consisting of mononuclear and glial cells and miliary granulomata consisting of closely arranged epithelioid cells. Free parasites are found in these inflammatory areas. The ocular pathology consists of areas of retinal degeneration and necrosis and an associated inflammatory reaction which extends to the choroid and sometimes into the vitreous. Focal lesions outside the central nervous system are found in the lungs, heart, adrenals, skeletal muscles, and subcutaneous fat. The adult form of the disease demonstrates an interstitial pneumonitis with shot-like areas of induration made up of alveolar connective tissue and alveolar lining cells, many of which contain the parasites. Focal necrosis in the liver, spleen, myocardium and brain are also frequent findings in the adult form.

*Symptoms and Physical Signs:* Due to the pathology described there are definite symptoms and signs resulting.

In the congenital form the signs and symptoms may be evident at birth or become evident in some months or even years after birth. Hydrocephalus or microcephalus, mental retardation, spastic paraplegia, visual difficulties due to macular chorioretinitis and x-ray evidence of intracranial calcification are all characteristic. Chorioretinitis is the most constant finding and some authors say an invariable one.

Acquired toxoplasmosis of the childhood type is characterized by a diffuse non-suppurative encephal-

itis with an associated mononuclear pleocytosis and markedly increased protein in the spinal fluid.

Toxoplasmosis of the adult type is ushered in by weakness and malaise for about one week followed by marked rise in temperature. A cough with clinical signs of an atypical pneumonia is followed by a diffuse red or pink maculo-papular rash of the Rocky Mountain spotted fever type. It covers the entire body except the scalp, palms of the hands and soles of the feet. X-ray does not show much evidence of pneumonitis, but dyspnea, cyanosis, rales, and unproductive cough are evident. By x-ray normal lung markings are accentuated. Death is common and occurs six to 18 days after the initial temperature rise. However, all cases do not die and it is probable that many cases of atypical pneumonia may be due to this infection.

Chorioretinitis in older children and adults has in a large number of cases been thought to be of this origin by some authors. Sabin does not adhere to this belief.

*Diagnosis:* Diagnosis of the disease is based upon the foregoing signs and symptoms plus:

1. The isolation of the parasite itself (this is done only at autopsy).
2. The presence of *Toxoplasma* neutralizing antibodies in the serum as determined by the dye test devised by Sabin and Feldman and described in *Science* for December 10, 1948.
3. The complement fixation reaction whereby existing titres were raised by antigen injections.
4. Cutaneous test with toxoplasmin (*Toxoplasma* antigen). This latter test is similar to the tuberculin test. By Sabin this test has been discounted as a reliable index of the existence of infection. The general population in the Cincinnati area showed as high as 65 per cent positive in the age group over 40 years. Antibody titres obtained on the positive reactors were too low to be of significance.

*Differential Diagnosis:* The congenital form of the disease must be differentiated from other forms of central nervous system abnormality. The syndrome of chorioretinitis with microcephalus or hydrocephalus, intracranial calcifications, mental retardation and spastic paraplegia with positive blood findings in the infant and mother make the diagnosis certain. Other forms of congenital central nervous system involvement will be lacking in several of these factors.

The childhood type of acquired toxoplasmic encephalitis can be differentiated from other forms of encephalitis only by immunologic study of antibody titre and skin and complement fixation reactions. The presence of large amounts of protein in the spinal fluid is suggestive.

The adult type must be differentiated from the



ricketsial infections with their attending rashes, red measles, infectious mononucleosis, and other atypical pneumonias. The serological antibody and skin test findings are negative for some time, but the complement fixation test is positive within about one week following onset of the illness. The typical leukocyte count of infectious mononucleosis and the heterophile antibody titre serve to differentiate it. The Weil-Felix reaction rules out the rickettsial infections (Rocky Mountain spotted fever, etc.).

*Treatment:* Treatment has been discouraging. Moderate benefit has been obtained with sulfapyridine, sulfadiazine and sulfamerazine given in full therapeutic doses for about two weeks. In the congenital form damage is usually so great before a diagnosis is obtained that it is of little avail.

Other drugs have been tried and found wanting. Among them are Trypaflavine, rivanol, potassium antimony tartrate, mapharsen, quinine, streptomycin, penicillin, chloromycetin, aureomycin, polymyxin, chlorguanide, subtilin, bacitracin, para amino benzoic acid, nicotinic acid, nitrofurazone.

Desensitization by graduated doses of *Toxoplasma* antigen supplemented by intravenous typhoid vaccine has been used with benefit in cases of chorioretinitis. This supports the idea that this is an allergic manifestation of the disease.

#### Case History

On September 28, 1949, a female infant, S. S. J., was born to a mother of 27 years. She was the third child. The infant weighed six pounds 15¼ ounces, was 18½ inches in length and arrived approximately two to three weeks prior to the expected confinement date. The delivery was carried out under mild Demerol and Seconal analgesia. It was a cephalic occiput anterior presentation. Breathing and crying were spontaneous and no gross anomalies were apparent. The baby showed an initial weight loss down to six pounds ¾ ounces on the third day, followed by a gain to six pounds one ounce on the fourth day when the mother took the baby home. The infant was breast fed. During these first four days in the newborn nursery the attending nurses noted twitching of the extremities on several occasions, but no rigidity or cyanosis was apparent.

The baby was seen in the clinic when one month old. Its weight had increased to eight pounds two ounces (a gain of one pound three ounces over birthweight). The height had increased to 20¾ inches (a growth of 1⅞ inches). At the time of this visit a hemangioma of the left upper pectoral region was noted. It was of the combined superficial and deep type, and radium therapy was thought advisable. The parents were referred to a radiologist in Wichita for this treatment. The infant was seen again two weeks later at the age of six weeks and

had gained to nine pounds seven ounces (one pound five ounces over preceding visit). The mother had changed from breast to bottle feeding because of inadequate milk supply. An evaporated milk formula was being given. The parents had taken the child to the radiologist and one treatment to the hemangioma had been given.

The child was seen at two months of age at which time the weight was 10 pounds 13 ounces, height 21⅞ inches. The mother stated the baby cried a great deal and had loose stools with much intestinal gas. A small umbilical hernia was noted at this time. Formula adjustment was made.

At three months of age the child was brought in, the mother stating that the child was having too many bowel movements and had a cough and fever at times. Rectal temperature was 100 degrees. No rales could be heard. Body weight was 11 pounds 14 ounces. Formula adjustment was made and antispasmodic medication prescribed.

The child was not seen again until it was four months of age, when the mother brought her in with a mild acute gastroenteritis. The child was given 200,000 units of procaine penicillin intramuscularly, kapectate orally, and placed on boiled skim milk until the diarrhea was controlled.

The child then was not seen until three months later when she was seven months old. At that time the mother brought her in because she was failing to do the things which were normal for an infant of her age. She could not roll over or sit up. Her body weight was 15 pounds 12 ounces, height 27½ inches. At a glance it was apparent that she was microcephalic. The occipitofrontal head circumference was only 14½ inches. The child could not sit alone, the difficulty seeming to be one of weakness. No spasticity of the extremities was noted. The child was pale. Reflexes were active and normal. The mother was advised of the probable diagnosis of idiopathic microcephaly and asked to return for progressive head measurements to confirm it.

One month later (when the child was eight months of age) the head circumference had increased by ¼ inch. The child had gained 10 ounces. X-ray of the skull taken at this time showed the sutures still to be open and small intracranial calcifications were evident. Movement by the child when the picture was taken obscured good detail. When she was 9½ months old (one month later) the head circumference had not increased beyond that of the preceding month. Still no spasticity was evident. The body weight had increased to 16 pounds 14 ounces.

Five months later at the age of 15 months the child was seen again. The head circumference had increased by ½ inch, being now 15¼ inches. The

child seemed more alert but still definitely retarded mentally. Teething was retarded, and the child showed marked evidence of spasticity on the right side with right spinal curvature and spastic arm and leg.

On March 28, 1951, at 18 months of age, the child was again seen. X-ray of the skull at this time showed further intracranial calcification. The radiologist reported as follows: "The skull is microcephalic. Distributed over the frontal, temporal, and parietal areas are flaky areas of calcium deposit. When viewed from the frontal aspect these flaky calcium deposits are seen to be intracranial. The deposits appear to be limited to the cerebral area. None are seen in the cerebellar area. The frontal-parietal suture line appears to be open. A previous diagnosis of toxoplasmosis has been made." *J. B. Nanninga, M.D.*

Ophthalmological examination of the retina and eye-grounds under general anesthesia resulted in the following report: "Under general anesthesia fundoscopic examination revealed a definite and distinct bilateral old healed chorioretinitis. It was confined to the macular region of the right fundus and was both macular and extramacular on the left, extending from the macular areas of the disc and also superiorly from the disc." *E. K. Enns, M.D.*

Spasticity of all extremities was pronounced. The child could not sit or stand. Mental retardation was marked. Toxoplasmosis antibody titre obtained at this time was positive in a dilution of 1: 16, 384. This test was run under the direction of Dr. Harry Feldman, State University of New York Medical Center, Syracuse, New York.

At the time of this test the mother had given birth to a fourth child—a boy who was then two days

old. Antibody titer on the mother and on the newborn was positive in a dilution of 1:1024. Tests on the mother and newborn done six months later were: mother positive 1:256; infant 1:4.

Other members of the family were similarly tested. The second child, aged three years, has a titer of less than 1:64; this is not considered significant. The father and the oldest child, age four years, have negative tests.

During the first pregnancy the family home was rural, near Burrton, Kansas. During the second pregnancy the family was in Newton on East Second Street, a usual residential district. During the third pregnancy, the one resulting in the infected child, the family home was just across the street and east of a large flour mill and elevator. This house has since been razed. The mother states that she was not conscious of the presence of rats or mice in her house. They have had no pet cat or dog at any time; however, there are many squirrels in the vicinity. The mother states that she had no acute illness during her third pregnancy though she does recall night sweats and aching for some time during its early part. This subsided spontaneously and no medical attention was sought. Her first prenatal visit was not made until two months prior to her delivery. Total weight gain was 23 pounds. Urine was always normal and blood pressure showed no abnormalities. It was considered to be a normal pregnancy.

*Discussion:* The perspective of this case leads one to believe that this mother suffered an acute toxoplasmic invasion during her third pregnancy. The source of this infection is not clear. Through hematogenous transplacental spread the fetus was infected in utero and began to show outward manifestations in the form of central nervous system involvement between the fifth and seventh months of postnatal life. The frequent gastrointestinal upsets might have been of significance. Since the seventh month, observation of this child has shown increasing spasticity and mental retardation. X-ray of the skull shows increasing calcification and growth of the skull is proceeding at a much retarded rate although the sutures are still open. The eye shows the typical chorioretinitis involving the macular area which is characteristic of the disease. The blood serum shows a toxoplasmosis antibody titre which is positive in a dilution of 1:16, 384.

The mother of the child is clinically unaffected by the disease and has since given birth to a fourth child. The antibody titre of the serum of the mother and of the newborn were identical, being positive in a dilution of 1:1024. All previously reported cases of this nature indicate that this new baby will be unaffected by the disease. In a personal communica-

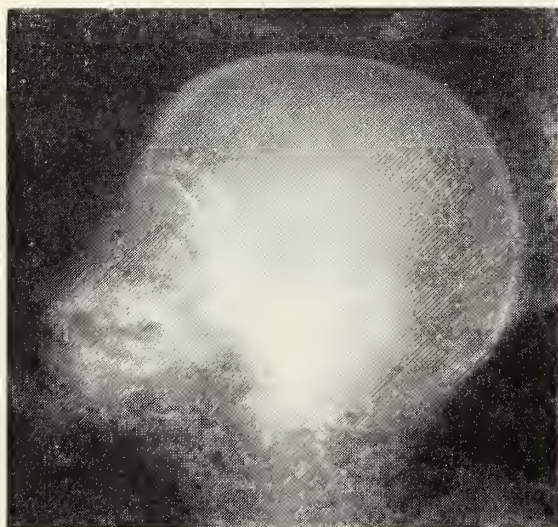


Figure 1. Lateral view of skull of affected child taken at 18 months of age showing the intracranial calcifications characteristic of the disease, congenital toxoplasmosis.



tion from Dr. Harry Feldman of Syracuse University, New York, he states that the serum antibody of the newborn represents a passive transfer from the mother and that in all probability this will be entirely gone by the time the child is six months of age. Specimens of sera sent to him at three and six months of age have confirmed this.

*Summary:* The relatively newly recognized disease, toxoplasmosis, has been defined and discussed as to its history, incidence, etiology, pathology, symptoms, physical signs, diagnosis and treatment.

A case of congenital toxoplasmosis has been presented and the expected outcome of the latent in-

fection in the mother with reference to subsequent pregnancies has been discussed.

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## Glomus Jugulare Tumor\*

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Glomus jugulare tumors are of sufficient rarity to make the report of a case treated with x-ray and surgery of value. To date there have been 21 proven cases recorded, and an additional 13 probable cases have been cited. These tumors have also been termed nonchromaffin paragangliomas and carotid body tumors of the middle ear.

Guild,<sup>1</sup> in 1941, described a structure in the middle ear, usually in the region of the jugular bulb, which closely resembled the glomus caroticum, or carotid body; for this reason he termed this structure the glomus jugularis. A tumor of this body was first reported by Rosenwasser<sup>2</sup> in 1945. LeCompte, Sommers and Lathrop<sup>3</sup> recorded the second case in 1947, and Kirkie,<sup>4</sup> also in 1947, added a third case that occurred in conjunction with a carotid body tumor. Since that time, Winship, Klopp and Jenkins<sup>5</sup> have compiled two more cases, cited six additional proven ones and 13 probable ones. Lattes and Waltner<sup>6</sup> collected eight cases from Columbia University, and listed two more previously unrecorded acceptable cases. The most recent case was published by Dockerty, Love and Patton.<sup>7</sup> Four of the recorded cases have been malignant.<sup>5</sup>

A review of the surgical material at the University of Kansas Medical Center revealed but one case of glomus jugulare tumor.

#### Case Report

H. I., a 61-year-old, married white woman, was first seen in the Out-Patient Clinic on September 13, 1950. She complained of a growth in the left

ear of 10 years duration, and had been treated for fungus infection of this ear for eight years. At no time did she suffer pain. Hearing loss was first noticed in the left ear three years ago.

Examination revealed a red polypoid mass, which completely filled the left ear canal to its bony lip. There was no purulent discharge, but biopsy of the mass was attended by brisk hemorrhage, which was controlled by packing the canal with vaseline gauze; the pathological report was aural polyp with chronic inflammation. Second and third biopsies were done on October 19 and October 24, 1950, which were again complicated by profuse hemorrhage requiring packs. The pathological reports were identical with that which was previously submitted. The remainder of the physical examination brought to light no abnormality, and the mastoid x-rays showed no evidence of sclerosis or trabecular destruction, but only diffuse clouding and thickening of the cell walls. Laboratory findings were essentially within normal limits.

Endaural radical mastoidectomy was performed on November 17, 1950. During the procedure the mastoid antrum and aditus were found to be normal; the middle ear was filled with granulations, and facial twitching occurred whenever this tissue was touched. Considerable granulation tissue was removed but hemorrhage was so profuse that surgery was discontinued since visualization was impossible. The bleeding was controlled by packing. The pathological report on the material submitted was hemangioendothelioma.

X-ray therapy was then given in the amount of 3,364 R, over a period of 15 days, with the hope

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that the tumor would be destroyed or at least become less vascular, thereby making surgical eradication feasible. In two months time it was noted that the tumor had decreased in size, but had not disappeared. On January 19, 1951, revision of the radical mastoidectomy was carried out with very little bleeding. The tumor tissue was removed from the middle ear and it was discovered that the facial canal was eroded at the genu to the extent of about three mm. The nerve was shredded but there was no solution of its continuity. The lesion had invaded the eustachian tube and semi-canal of the tensor tympani, and extended to the wall of the carotid artery. All visible tumor tissue was removed and a split thickness skin graft was applied.

The patient awakened with a complete left facial paralysis which persisted for six weeks and slowly resolved until function was complete. Packs and sutures were removed on the sixth postoperative day, and the entire cavity was well epithelized within three weeks. There has been no recurrence to date.

#### Discussion

Since there is considerable controversy in the literature regarding the radiosensitivity of glomus jugulare tumors, we felt that the fact that this lesion diminished both in size and vascularity following irradiation should be reported. Complete surgical removal without damage to important structures was impossible before irradiation due to profuse hemorrhage. X-ray therapy alone proved to be ineffective insofar as total destruction of the tumor was concerned. The decrease in vascularity incident to irradiation made completion of the operation possible.

It is easy for one to miss the diagnosis of this tumor when it occurs in the middle ear, for biopsy reports frequently are returned as aural polyps, since chronic inflammation on the external surface is apparently a constant feature. The otolaryngologist will rarely do deep biopsy in this area for fear of damaging vital middle ear structures. It is quite possible that the disease remains undiagnosed in many instances for its likeness to chronic granulation tissue of chronic otitis media is most evident. Such granulations are frequently treated with strong cauterizing agents for long periods of time.

The diagnosis of glomus tumor was not made until after all the surgical procedures had been carried out. Careful re-examination of the first two aural polyps resected revealed no evidence of tumor. In the stalk of the third polyp removed, however, a small focus of tumor cells was found, from which a definite diagnosis of glomus jugulare tumor could be made. The material from the last two surgical procedures contained abundant tumor tissue.

The gross appearance of glomus tumors is not typical in any way; the tumor commonly presents as a vascular aural polyp, as in the present case. Microscopically, the tumor is composed of numerous small thin-walled, endothelial lined spaces, closely surrounded with small nests and masses of "epithelioid" cells that are large and polyhedral in shape with vesicular nuclei. (Figure 1). Reticulum



Figure 1. Irregular clumps of tumor cells are seen surrounding numerous small vascular spaces in the stalk of an aural polyp. The squamous epithelial lining of the polyp is evident. X 70.

stains reveal delicate reticulum strands surrounding clumps of tumor cells. (Figure 2). The reticulum

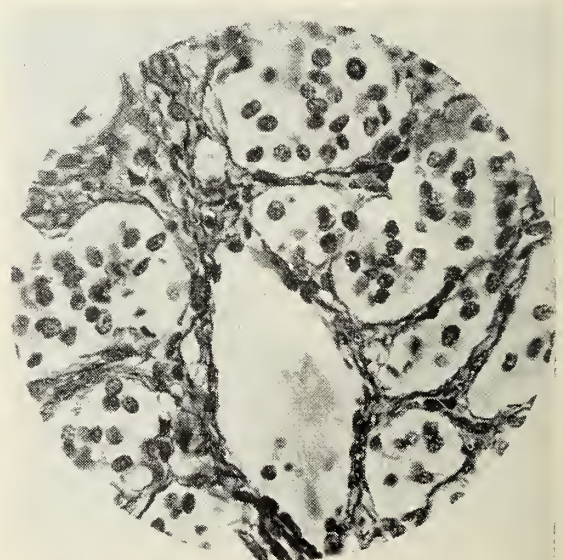


Figure 2. Groups of tumor cells are adjacent to a central endothelial lined space. Reticulum strands surround masses of tumor cells rather than individual cells. Wilder's Reticulum stain. X 600.



strands surround clumps of cells rather than individual cells, and are said to be continuous with the endothelial lining of blood vessels.<sup>6</sup> This is generally true in the present case, but in some areas, reticulum fibers are seen to surround individual cells. The chromaffin reaction has been negative in reported cases. Although the tissue in this case was formalin-fixed, mordanting with chromate salts was done, but negative results were obtained.

The relation of the glomus jugulare and similar structures to paraganglionic or chromaffin tissues is confusing and deserves mention. The adrenal medulla and the organs of Zuckerkandl are properly called chromaffin tissue, or paraganglia, and are characterized by: (a) distinctive staining reactions, the best known of which is the chromaffin reaction; this consists of the appearance of brown or greenish granules in the cytoplasm of the cells after fixation in chromate solutions;<sup>8, 9</sup> (b) the production of epinephrine; (c) innervation largely by preganglionic fibers of the sympathetic nervous system;<sup>10, 11</sup> (d) origin (from the neural crest) from the same cells that differentiate into sympathetic ganglion cells, and maintenance of a close association with sympathetic ganglia.<sup>10</sup>

The carotid body, aortic bodies and the glomus jugulare are all morphologically similar to the adrenal medulla and have been classified as paraganglionic structures by various authors. The carotid bodies differ embryologically as well as functionally from paraganglionic tissue in that they show no epinephrine production and have a chemoreceptor function.<sup>11</sup> The cells usually do not give a positive chromaffin reaction,<sup>12, 13</sup> but this has been occasionally demonstrated.<sup>14</sup> The glomus jugulare and aortic bodies are generally considered to be

analogous to the carotid bodies, and tumors derived from these structures are similar in all important respects to carotid body tumors. These cells are regarded as neuroepithelial cells that function as chemoreceptors.<sup>15</sup> Lattes and Waltner<sup>6</sup> and Lattes,<sup>16</sup> who reported tumors of the glomus jugulare and the aortic arch bodies, believe that these structures "are probably homologous parts of a system of organs consisting of masses of nonchromaffin tissue closely associated with the parasympathetic division of the autonomic nervous system and its ganglia." This they call nonchromaffin paraganglionic tissue. Other authors do not regard these structures as being paraganglionic.<sup>10, 11, 13</sup>

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# Further Studies of the Geography of Histoplasmin Sensitivity in Kansas and Missouri

Michael L. Furcolow, M.D.,\* and Jay Sitterley, M.D.\*\*

Kansas City, Kansas

Topeka, Kansas

Wide geographic differences in histoplasmin sensitivity in the United States have been reported by Palmer,<sup>1</sup> Christie and Peterson,<sup>3</sup> Beadenkopf et al.,<sup>4</sup> and Smith et al.<sup>5</sup> These authors all agree that there is an area of very high histoplasmin sensitivity in the east-central United States extending from Kansas on the west to Ohio on the east. Palmer has analyzed histoplasmin sensitivity among student nurses who were lifetime residents of Kansas and Missouri, and found that the rate in northeastern Kansas and north central Missouri was almost 80 per cent, whereas in northwestern Kansas the rate was only seven per cent. Kansas, therefore, appears to be on the western edge of the area of high histoplasmin sensitivity.

Prior and Allen<sup>6</sup> have reported on geographic differences in histoplasmin sensitivity among student nurses and university students in Ohio. They found that the rate of sensitivity dropped sharply from southwestern Ohio to the east and to the north. In fact, the rate in the area near Cincinnati was found to be about 76 per cent, whereas that in northeastern Ohio was about 17 per cent. They also found 13 per cent greater incidence of positive reactions among persons who were reared on farms as compared with persons who were reared in cities. A slightly greater incidence of reactors among males than among females was also reported.

Bunnell and Furcolow<sup>7</sup> have reported on the variation in histoplasmin sensitivity in certain cities in eastern and central Kansas. They found that the reaction rates varied markedly as one moved westward from Kansas City, Missouri. For instance,

at age 18 in Kansas City about 70 per cent of school children were found to be positive; in Ottawa, almost the same percentage; in Lawrence, a little over 40 per cent; in Topeka, less than 30 per cent; and in Wichita, about five per cent. This rapid drop as one moves westward appears to be characteristic of Kansas. This phenomenon appeared to merit further study. The present paper describes further geographic distribution of histoplasmin sensitivity in Kansas based upon studies of school children in various counties in Kansas. In addition, studies in one county in Missouri are included for comparison

## Material and Methods

The groups tested in this survey consisted of grade and high school children. Students in the public schools reported in this study are from Leavenworth, Cherokee, Harvey, Seward, Sherman, and Thomas Counties in Kansas, and Boone County in Missouri. A total of 7,855 grade and high school students were tested, of which 6,400 were from six counties in Kansas and 1,455 were rural residents of Boone County, Missouri. The age distribution of those tested is shown in Table 1.

The program consisted of a tuberculin and a histoplasmin skin test on each person. All of the tuberculin and histoplasmin skin tests were performed and interpreted by two physicians and two nurses. This provided consistent methods of testing and reading. The results of the tuberculin testing will be reported in a separate paper. The histoplasmin employed in these studies (Lot H 40) was furnished by Dr. Arden Howell, Jr., of the United States Public Health Service. It was employed in a dilution of three to 1,000. One-tenth cubic centimeter of the appropriate dilution of histoplasmin was injected intracutaneously in the forearm and

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Table 1. Age distribution of 6,400 lifetime residents of 6 Kansas counties and 1,455 lifetime residents of rural Boone County, Missouri

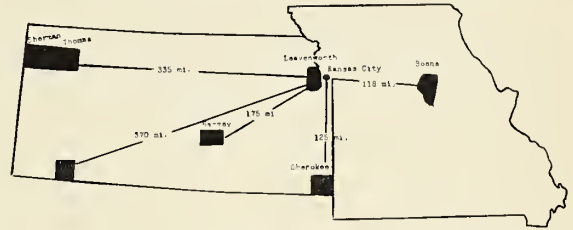
Age	6 Kansas Counties	Boone County Missouri	Age	6 Kansas Counties	Boone County Missouri
1	-----	13	11	596	124
2	-----	23	12	541	106
3	-----	50	13	489	92
4	-----	47	14	547	83
5	171	66	15	465	63
6	469	143	16	388	40
7	483	156	17	343	18
8	581	138	18	69	6
9	638	149	Total	6,400	1,455
10	620	138			



the tests were read at 48 hours in the majority of cases. A few were read at 72 hours. Measurements were made of both erythema and induration, and a positive reaction was considered to be one in which the induration measured five mm. or more in diameter. Residence histories were obtained on all persons in this study. These residence histories were obtained with considerable care, and a person was classified as a lifetime resident of a particular county if he had not been absent from this county for more than six months at any one time. This paper is based solely on analysis of lifetime residents of the respective counties. The map shows the location of the counties tested and their distance from Kansas City, Missouri.

*Results:* In Table 2 and Graph 1 are shown the results obtained when histoplasmin tests were performed on grade and high school children in the various counties. A total of 7,855 lifetime residents of these counties were tested. The percentage of

positive reactors found among these children varied markedly from slightly over one per cent in Sherman and Thomas Counties in the Northwest to 84 per cent in Boone County in Missouri. The sensitivity curves in Graph 1 show a marked increase in reaction rates from west to east with Thomas and



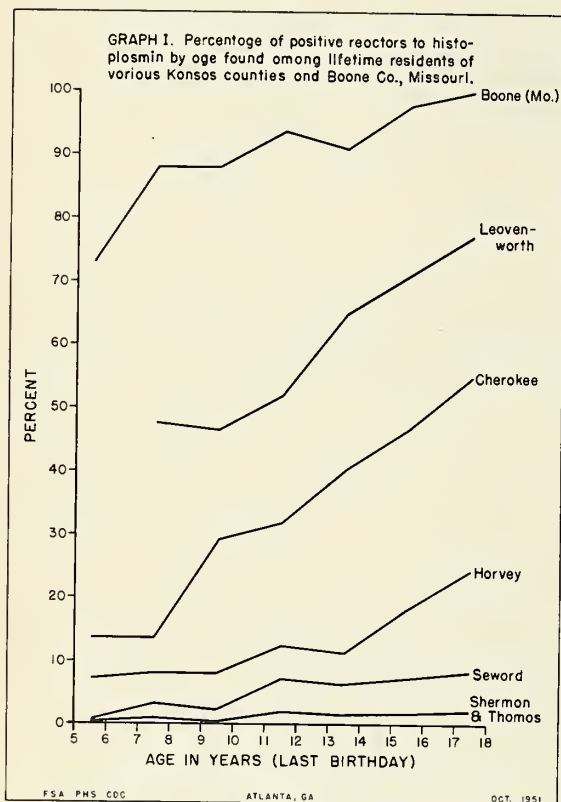
Sherman Counties the lowest; Seward County next, about three times as high as Thomas and Sherman Counties; Cherokee County was almost three times as high as Harvey County, and Leavenworth County was somewhat less than twice as high as Cherokee

Table 2. Number and per cent positive to histoplasmin by age group in six Kansas counties and Boone County, Missouri

County	Age								Totals
		5-6	7-8	9-10	11-12	13-14	15-16	17-18	
Thomas and Sherman	Number tested	313	299	265	255	244	167	94	1637
	Number positive	1	3	1	5	4	3	2	19
	Percent positive	0.3	1.0	0.4	2.0	1.6	1.8	2.1	1.2
Seward	Number tested	135	120	85	82	48	41	24	535
	Number positive	1	4	2	6	3	3	2	21
	Percent positive	0.7	3.3	2.4	7.3	6.3	7.3	8.3	3.9
Harvey	Number tested	97	319	308	293	247	184	86	1534
	Number positive	7	26	25	37	29	34	21	179
	Percent positive	7.2	8.2	8.1	12.6	11.7	18.5	24.4	11.6
Cherokee	Number tested	94	175	178	150	156	156	80	989
	Number positive	13	24	52	48	63	73	44	317
	Percent positive	13.8	13.7	29.2	32.0	40.4	46.8	55.0	32.1
Leavenworth	Number tested	1	151	422	357	341	305	128	1705
	Number positive	0	72	197	186	221	217	99	992
	Percent positive	0	47.7	46.7	52.1	65	71.1	77.3	58.2
Boone County Missouri	Number tested	209	294	287	230	175	103	24	1455
	Number positive	153	258	253	217	160	101	24	1226
	Percent positive	73	88	88	94	91	98	100	84

County. Boone County, Missouri, was about 50 per cent higher than Leavenworth County.

Reference to Table 2 shows that in the 11-to-12-year-old group in Thomas and Sherman Counties, about two per cent of the children showed positive reactions; whereas, in Seward County the rate was



seven per cent; in Harvey County, 13 per cent; in Cherokee County, 32 per cent; in Leavenworth County, 52 per cent; and in Boone County, 94 per cent. Another interesting fact is that the rate in Thomas and Sherman Counties does not increase

from the 11-to-12-year group through the 17-to-18-year group. In fact, intervening groups appear somewhat less sensitive. The same appears to be true in Seward County; that is, the 17-to-18-year group shows only eight per cent positive, compared to seven per cent among the 11-to-12-year group. In Harvey County, on the other hand, there are twice as many positives among the 17-to-18-year group as among the 11-to-12-year group. In Cherokee, Leavenworth, and Boone Counties there is a steady rise through all age groups.

It is evident from Graph 1 that Boone County, Missouri, represents an extremely high area of histoplasmin sensitivity. In fact, it appears from a review of the literature that these represent the highest rates yet reported. It is seen that 88 per cent of the children were positive in the seven-to-eight-year-old group.

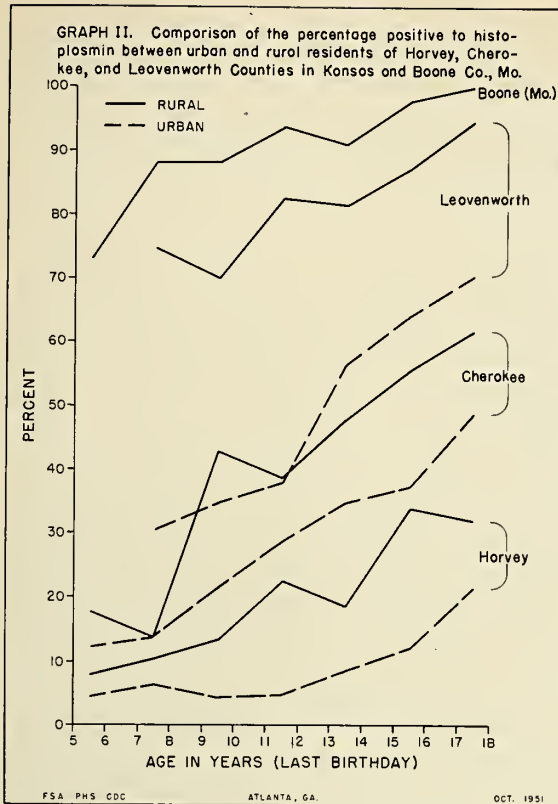
#### Influence of Urban or Rural Residence on Histoplasmin Sensitivity Rates

In Table 3 are illustrated the different rates found among urban and rural residents. It is interesting to note that in areas of low sensitivity, such as Thomas, Sherman, and Seward Counties in the western third of Kansas, there is very little difference between the urban and rural residents. This is probably accounted for by the fact that there are very few large cities in these counties, and the people are all essentially rural residents. However, in Harvey County, twice as many positives are found among the rural residents as among the urban residents, and in Cherokee and Leavenworth Counties considerably higher rates are found among rural residents than among urban residents. These differences in rates are illustrated in Graph 2, which shows that the rural resident rates are consistently higher than the urban resident rates and that this increased sensitivity among rural

Table 3. Comparison of percentage of reactors to histoplasmin among urban and rural residents of Kansas

County	Urban			Rural			Combined		
	Number tested	Number positive	Percent positive	Number tested	Number positive	Percent positive	Number tested	Number positive	Percent positive
Thomas and Sherman	962	12	1.2	675	7	1.0	1,637	19	1.2
Seward	431	15	3.5	104	6	5.8	535	21	3.9
Harvey	918	73	8.0	609	105	17.2	1,527	178	11.7
Cherokee	611	158	25.9	378	159	42.1	989	317	32.1
Leavenworth	1,139	545	47.8	557	442	79.4	1,696	987	58.2
Total	4,061	803	19.8	2,323	719	31.0	6,384	1,522	23.8





residents is most marked where the rates are highest. The rates for rural Leavenworth County residents approach those found for rural residents of Boone County, Missouri. This increased sensitivity among persons with rural residence previously has been noted by Prior and Allen<sup>6</sup> in their studies.

In Table 4 is shown the comparison of the percentage of positive reactors between males and fe-

males. It is seen that the over-all per cent positive is a little higher among males than females. However, the difference is not very large.

#### Discussion

One of the purposes of this study was to attempt to outline some of the epidemiological factors which influence histoplasmin sensitivity. Obviously, the geography played a tremendous part, and it was hoped that the study would establish whether or not any histoplasmin reactors would be found in northwestern Kansas among young children, since it was known from previous study that the rates of reaction were low.

It was found that it was possible to divide the population into two groups based on age; one, under the age of 11 years, appeared to have almost no reactors; the other, over the age of 11 years, appeared to have a rate about three times that of the younger children. Other than this sharp rise in rates about the age of 11 years, the rates appeared constant for each group without the usual yearly rise in rates found in the other counties.

This is perhaps best illustrated by the fact that among 877 children under the age of 11 years who were tested in Sherman and Thomas Counties, about 0.6 per cent were positive, whereas, among 760 children who were over 11 years of age, about two per cent were positive; or the rates among the older children were three times as high as those among the younger children. Similar findings are seen in Seward County, where 2.9 per cent of 240 children under 11 years of age were positive, while 7.2 per cent of 195 children over 11 years of age were positive.

Why the rate should suddenly increase at about

Table 4. Comparison of percentage of reactors to histoplasmin among males and females

County	Male			Female			Combined		
	Number tested	Number positive	Percent positive	Number tested	Number positive	Percent positive	Number tested	Number positive	Percent positive
Thomas and Sherman	815	12	1.5	822	7	0.9	1,637	19	1.2
Seward	263	13	4.9	272	8	2.9	535	21	3.9
Harvey	752	96	12.8	775	82	10.6	1,527	178	11.7
Cherokee	504	176	34.9	485	141	29.1	989	317	32.1
Leavenworth	810	508	62.7	886	479	54.1	1,696	987	58.2
Boone County, Mo.	754	634	84.	701	592	84.5	1,455	1,226	84.3
Total	3,898	1,439	36.9	3,941	1,309	33.2	7,839	2,748	35.0

the age of 11 or 12 and remain relatively stationary at this higher rate is not determined. It is interesting to speculate that children, 11 years of age when the tests were done in early 1949, were born in 1938. Review of the U. S. Weather Bureau records shows that 1938 marked the ending of a period of 10 years of very low rainfall in this area characterized by drought, semi-arid conditions, and dust storms. Indeed, this was the heart of the "dust-bowl." It would appear reasonable to suppose that these arid windy seasons were ideal for air-borne dissemination of dried fungus spores, although less conducive to their reproduction. It is interesting to note that a similar break in the infection rate, with doubling of the rates about the year 1938, appeared from calculations of the theoretical annual infection rates in three other areas, Kansas City, Missouri, and Ottawa and Williamsburg, Kansas.<sup>7</sup>

Low though the rates are in northwest Kansas, one must conclude that there are some few natural infections. Though the exact role of wind is not yet understood in the dispersion of this fungus, it is of interest to note that there is an east-to-west wind about five per cent of the time. Since the areas to the east have much higher histoplasmin rates, this might account for an occasional infection. Also, the classification of a lifetime resident may not be strict enough. Though many live in endemic areas without becoming sensitive, it is not yet known how short a period of time will result in hypersensitivity. It is not inconceivable that a short trip into an endemic area might result in an infection with a resultant skin reaction.

There is a definite relationship between the presence of moisture and the growth of most fungi. *Histoplasma capsulatum* has been shown<sup>8</sup> to be particularly dependent upon moisture for its growth. It is of interest, therefore, to compare the average annual precipitation in the different counties as recorded by the U. S. Weather Bureau based on 40 year records.<sup>9</sup>

County	Station	Average Annual Rainfall in Inches
Boone	Columbia	37.82
Leavenworth	Leavenworth	34.18
Cherokee	Columbus	41.57
Harvey	Newton	30.81
Seward	Kismet	17.31
Sherman	Goodland	17.67
Thomas	Colby	17.86

The comparison of the annual average precipitation with the histoplasmin sensitivity rates shows that in general the higher areas have twice as much rainfall as the lower areas, although the highest area (Boone County) does not have the highest average precipitation. That the relationship to moisture is

perhaps not direct is shown by the fact that Cherokee County, which has the highest average annual rainfall, has rates of histoplasmin sensitivity which are below those found in Boone and Leavenworth Counties. Whether this is because of the excessive presence of zinc in the soil of Cherokee County or whether because of other factors is not evident at present. The tree cover in Cherokee County is largely restricted to the southwest corner, whereas that in Leavenworth and Boone Counties is rather generally distributed over the counties. Cherokee County has a river and dam in the southeast corner while the Missouri River forms part of the county border of both of the counties with the highest histoplasmin rates (Leavenworth and Boone).

In comparing the general geography and the presence of moisture in the various areas tested, it is evident that the high plains regions have a definite lack of larger streams, rivers and lakes; hence, surface water rapidly drains away. In the southwest there is less rapid drainage, and there are streams that flow the year round. It would seem, therefore, that in certain well-protected spots where the moisture content is right, there might be circumstances favorable to the growth of the fungus. As one comes further east and into the northeast, these moisture-temperature factors are more generalized and favorable to the growth of this fungus. It would seem, therefore, that the geographic variation in reactor percentages could be accounted for in the environmental differences over the state.

#### Summary

Results of the present study confirm the marked geographic differences in histoplasmin sensitivity rates in Kansas and Missouri. This is of importance to the physician in skin testing because the chances of finding a positive reaction vary markedly with the geographic area in which the patient resides. Thus, positive reactions are extremely rare in northwest Kansas and extremely common in northeast Kansas and Missouri.

Those persons living in a rural environment are much more likely to be positive than those who live in an urban environment. It is postulated that geographic differences may be of importance in histoplasmin sensitivity. Perhaps differences in altitude may simply be reflected in differences in moisture content, which may be the critical factor in the distribution of *Histoplasma* in its natural state.

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## The Role of Thyroid Feedings in Pregnancy\*

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It is without question of doubt that the institution of successful reproduction depends upon the proper balance of the hormones of the glands of internal secretions. In this consideration, I believe we must include the balance in the expectant father as well as the expectant mother.

The thyroid gland and its secretions has been one of the earliest and most studied glands of the body. Yet, I do not believe that we are totally conscious of the complete role that it plays in living and reproduction. It is my intention in this presentation, not necessarily to add anything new to the voluminous material upon thyroid function, but to attempt to emphasize its importance in the obstetric field. Although hyperthyroidism is definitely important, this discussion will be restricted to the hypothyroid state.

In beginning this consideration a brief statement of some of the known functions of the thyroid may clarify some of the clinical assumptions that will be made later on.

Means<sup>1</sup> in his textbook makes the following statements: "Studies extending over a 75-year period have disclosed that the thyroid hormone plays a far-reaching role in the economy of the body. Broadly speaking it has to do with the rate of growth and differentiation of tissues, with the rate of energy exchange, with the metabolism of proteins, carbohydrates, fats and lipoids, salts and water, with the irritability of various tissues and with the activity of the other endocrines.

"It is clear that the thyroid hormone directly increases the rate of oxidation of tissue cells, probably all tissue cells.

"When the organism is deprived of thyroid hormone, along with the decline in the rate of oxidation, there takes place a storage of water, salts and protein. The protein is contained in the body fluids and is not a part of the protoplasmic mass.

"Attainment of adult dimensions and form is impossible in man or animals deprived of their thyroids.

"It becomes evident that the thyroid hormone is far more than an agent accelerating the metabolism of all cells in the body. In addition to being a catalytic agent accelerating energy transformations, the thyroid hormone seems profoundly to affect the life of the cell in every aspect of its existence, its physical states, its chemical state, its irritability, its rate of maturation and the rate under which it undergoes mitosis, that is to say the length of life.

"Life antedated the thyroid hormone, for the hormone is a product of living matter, and life is possible in its absence—a certain sort of life."

### Symptoms and Diagnosis of Hypothyroidism

The symptoms of hypothyroidism are many and varied, oftentimes being exact opposites. The patient may be unable to stay awake or may be extremely nervous and sleepless. The pulse rate may be slow or may be fast. The patient often complains of shortness of breath, sighing and yawning respiration, and although she is aware of the ability to inspire deeply, she does not obtain a sensation of relief. Some patients may have no complaints, because they have learned to live within their energy income and have never experienced the boundless energy of their hyperthyroid sisters. Headaches, particularly of the suboccipital variety, occur frequently. Often there occurs substernal pain.

We are all aware of the classical signs of thyroid deficiency, namely the myxedematous type of skin, the sparse brittle hair, etc. However, in the mildly deficient patient the signs are much less marked. The hair is usually dry and brushy with associated thick, scaly dandruff deposit on the scalp, or the hair may be very oily. The pulse rate may be slow or fast, but the heart sounds are usually of poor quality. The respiratory sounds are normal, but the rate of respiration is slow and the depth of respira-

\*Read before the Kansas City Obstetrical and Gynecological Society, November 1949.

tion is shallow. I would like to call attention to the sign of splotchy pigmentation so frequently seen over the exposed areas of the body and the dry pigmented areas seen over the ischial tuberosities and other pressure areas of the body. Examination of the thyroid area frequently reveals a nonpalpable thyroid or one that is moderately and diffusely enlarged but is quite firm in consistency. Examination of the mouth frequently reveals narrowed arches, irregular spacing of the teeth and a high, vaulted hard palate.

The common laboratory tests for deficient thyroid function are the basal metabolic rate and the blood cholesterol determinations. Certainly there is much to be learned from these examinations but they do not tell the entire story. Goodall<sup>2</sup> states that "there is a profound objection to the fixation of two percentages between which a patient's basal metabolic rate is considered normal. Such for example, that all patients between minus 10 and plus 10 are within normal rates." In the first place the patient may function best with a plus 10 rate. The patient had a basal reading of minus 10. That is a variation of 20 per cent. Another fallacy of basal readings is the abnormal circumstances under which they are taken. An introspective patient who gets up at the unusual hour after a sleepless night because of anticipation of something unpleasant, dresses, and gets to a basal laboratory perhaps apologetic because she is a little late, in most instances cannot relax, as the result of which we have a reading that is far from her basal reading. The only satisfactory place to take a basal reading on such a patient is in her own bedroom, very shortly after she is awakened from sleep.

In checking blood cholesterol determinations against basal metabolic rate determinations I find that there are frequent cholesterol readings well over, again, the arbitrary limits of 200 or 225 mgm. per cent with basal readings well within the arbitrary limits of normal. Again we find very low basal rates in the poorly fed and protein deficient diet group with normal or low blood cholesterol determinations. I would believe that this is principally a problem of assimilation and possibly a dietary intake very low in cholesterol producing foods. It would be interesting to know what percentage of these patients have defective acid formation in the stomach.

#### Relationship of Thyroid Hormone to the Obstetric State

The obstetric state is produced by the union of a spermatozoa with an ovum. In this union, through the potentiality of cell division and cell specialization, etc., there results a newborn infant. This infant has the capability of continued growth and development to maturity and the production of cells

of reproduction, etc. During the process of division and early growth this new organism is dependent upon the maternal organism for nurture.

What are the conceivable roles that the thyroid hormone may play in the picture? McCahey<sup>3</sup> believes that the thyroid gland bears a definite relationship to spermatogenesis, either by direct action of the hormone upon the germinal epithelium or a secondary action through the metabolic function of the hormone. Means<sup>4</sup> states that "with the exception of true myxedema there are perhaps no conditions in which the use of thyroid hormone is more important than in the treatment of sterility and habitual abortion." If these two theories are correct and if, as quoted earlier, the thyroid hormone profoundly affects the life of the cell in every aspect of its existence, its chemical states, its irritability, and its rate of maturation, we then should be able to transpose some of the results of thyroid deficiency in spermatogenesis, ovogenesis, fertilization implantation, growth and development. We would expect the union of a vigorous spermatozoa and vigorous ovum, implanted on a healthy endometrium, to produce a virile growth organism. But what would be the result of the union of two zygotes, one or the other, or both with decreased irritability, altered mitosis and disturbed rate of maturation? Is this one of the causes of the oft-mentioned blighted ovum, abortion and developmental disturbances?

Lietzenberg and Carey<sup>5</sup> state that "lowered metabolism, even to a moderate degree, interferes with the reproductive function in a large percentage of cases as is shown by disturbed menses, sterility and interruption of pregnancy." Benda<sup>6</sup> states, "We have seen mongolianism occur under the same conditions as abortion, threatened abortion, prematurity and hormonal sterility. We have further seen that there are indications of thyroid and pituitary deficiency." Benda<sup>7</sup> goes on to say that "thyroid anomalies are so frequently seen (about 38 per cent of the two groups tested) that they are an important link in the chain of events. A common denominator is a threshold condition of sterility." Means and Richardson<sup>8</sup> believe that any patient showing the slightest evidence of hypothyroidism should be given thyroid. They state that "there is no question that if this policy is rigidly carried out, few cretins will be born."

Javert, Finn, and Stander<sup>9</sup> in their studies on abortion find that 65 per cent of the primary habitual abortion group and 50 per cent of the secondary abortion group have BMR's of minus value.

#### Clinical Use of Thyroid Feedings

In this study I wish to present a summary of 267 patients who were given thyroid during the period



of gestation. For the purpose of emphasis I have divided these patients into the following groups: 1. Where thyroid was used as a physiological tonic. 2. In instances of sterility or relative sterility in which we thought that thyroid feedings played a definite part in the subsequent conception and chain of events. 3. The patients who had had one or more spontaneous abortions or premature labors, some of whom had given birth to deficient children but many of whom had had prior normal pregnancies. 4. Patients who had a history of previous toxemia with pregnancy or who gave a history of albuminuria and/or hypertension, either during pregnancy or otherwise. 5. A group of patients who were given thyroid in the postpartum weeks because of fatigue, irritability, sleeplessness, etc.

Many or even most of these patients have been given thyroid because of history, clinical symptoms and physical signs alone and have not had laboratory confirmation of a thyroid deficiency. I realize that I may be criticized in this procedure, but in many instances I did not want to postpone the use of thyroid until satisfactory laboratory determinations could be made. No patient is included in this series, either, who did not clinically tolerate thyroid feedings nor those that we thought were not consistent in taking their thyroid. In no instance was thyroid discontinued during pregnancy.

In summarizing and tabulating the results of this study in composite charts only the main symptoms and results are given. A few patient's histories and results will be given in greater detail for the purpose of emphasis. When the term normal pregnancy it used it will mean a pregnancy proceeding to term without albuminuria, hypertension or other obstetric disease followed by the birth of a normal viable infant.

#### 1. Physiological Tonic

I use this term physiological tonic advisedly because of the effect of thyroid hormone on cellular

metabolism and irritability. In this group of patients thyroid was administered for many reasons. Many were taking thyroid because of altered metabolic levels when they became pregnant. In others thyroid was administered because of signs and symptoms as determined on their prenatal visit and examination. Others were given thyroid because of bleeding in the first trimester of pregnancy, if there was any clinical evidence of a thyroid deficiency.

#### 2. Relative Sterility and Sterility

It is without question of doubt that some of these patients would have conceived had nothing been done other than physical examination and the correction of faulty dietary habits, cervical infections, etc.

#### Illustrative Cases:

1. Well developed and healthy gravida 0, attempting pregnancy for about 18 months. The basal metabolic reading was minus 14. She was placed on thyroid and the dose gradually increased to one and one-half grains. She went to term without complications. A diagnosis of a twin pregnancy was made. After an adequate test of labor she was delivered of healthy di-zygotic twins, by Cesarean section. In the subsequent 11 years she has not conceived.

2. A well developed and nourished gravida 0, attempting pregnancy for about three years. She had always been healthy with the exception of a history of intermittent albuminuria for a period of years. Her basal metabolic rate was minus 41 with a blood cholesterol reading of 204 mgm. per cent. She was placed on thyroid feedings and the dose was gradually increased to three grains. She conceived and delivered normal infants at term at the age of 26, 32 and 34.

3. A somewhat poorly developed and underweight gravida 0 of 23 years of age. When she was 20 years old she had an amputation of the cervix

Table I. Physiological Tonic

	Pa- tients	Before thyroid			After thyroid medication							
		Normal preg.	Ab.	Still born	Normal preg.	Abnor. preg.	Ab.	Still born	Term Died	Prem. Died	BMR Chol.	Av. Dose
On thyroid												
Before Preg.												
Small dose	9	1			13	1	1				1	1-1½ gr.
Mod. dose	21	16	3		26		1			1		2-3 gr.
Menstr. Dist.	18	4			27			1	1			1½-2 gr.
BMR or Cholesterol	31	10	2	1	31		2				43	1-3 gr.
Thyroid after pregnancy												
Bleeding	9	1			9							1-2 gr.
Fatigue, etc.	64	34	7		76		2					1-3 gr.
Total	152	66	12	1	182	1	6	1	1	1	44	

Table II—Relative Sterility and Sterility

Patients	Period of Sterility	Total No. Pregnancies	Term Living	Premature Living	Stillborn	Aborted	Ectopic Pregnancy
2	1 yr. minus	6	2	3	1		
6	1-2 yrs.	9	8			1	
6	2-3 yrs.	8	6			2	1
5	3-4 yrs.	8	7			1	
3	4-5 yrs.	3	1	1			1
5	over 5 yrs.	7	7				
27	Total	41	31	4	1	4	2

for a chronic cystic endocervicitis and a resection of one ovary for multiple cysts. She was told that the other ovary was cystic and that if she expected to have a family she should do so as quickly as possible. After attempting to become pregnant for eight months she reported for examination. Her basal metabolic rate was minus 16. She was placed on thyroid and the dose was increased to one and one-half grains. She conceived after four months and went through pregnancy normally until the 36th week when she delivered three days after a spontaneous rupture of the membranes. Two years later, while still on the same dose of thyroid, she went to 34 weeks when she had a spontaneous rupture of the membranes. Six years later, when she was not taking thyroid, she conceived and had periods of intermittent bleeding until she delivered spontaneously in about 26 weeks. Shortly afterwards she was placed on thyroid, conceived, and went through pregnancy normally until she had a spontaneous rupture of the membranes at 36 weeks. Her first, second and fourth pregnancies terminated with living infants who are now healthy, well developed, active boys.

### 3. Previous Spontaneous Abortion

It is in this category that I think perhaps the use of thyroid in obstetrics will continue to be of the

greatest value. If the figures in Table III are carefully studied, a marked difference in the fetal salvage will be noted.

#### Illustrative Cases:

1. A well developed and healthy woman 32 years of age. She gave a history of having had five miscarriages, ranging from six to eight weeks during the six years of her married life. This patient was started on thyroid feedings and the dose was gradually increased to two grains a day. After taking this dose for about a year, she conceived and carried to term and delivered without complications.

2. A 39-year-old woman giving the following history: Spontaneous miscarriage at 17, normal pregnancies at 22, 25 and 27, except that one of these children was mentally deficient; missed abortions at six and seven months when 28 and 30 years. She was placed on thyroid and her dose was increased to three grains. She was on this dose for several months when she became pregnant and carried normally to term and delivered a healthy appearing male child.

### 4. Previous Toxemias

If thyroid is of value in the maintenance of water and salt balance and in the metabolism of proteins and other food substances, its use should have some merit in the patients who have had previous tox-

Table III. Previous Spontaneous Abortion

Patients	Age Group	Before Thyroid Medication					After Thyroid Medication			
		Total Preg.	Normal Preg.	Abortion	Mongo.	Stillborn	Total Preg.	Normal Preg.	Abortion	Stillborn
19	20-24	30	3	26	1		24	24		
20	25-29	37	8	28		1	22	22		
19	30-34	44	8	33		3	22	19	1	2
9	35-up	13	1	10		2	10	9		1
67		124	20	97	1	6	78	74	1	3



emias. Its effect upon cellular metabolism and irritability may provide the necessary stimulus for proper excretion of the by-products of protein metabolism in the kidney.

#### Illustrative Case:

This patient, a well developed and about average weight woman of 26 years of age, was seen by me during her first pregnancy. She was checked about the 24th week of pregnancy and at that time had

period who seem to have a degree of fatigue, weakness, nervousness, hot flashes, etc. entirely out of proportion to those of the average patient. In theorizing, if a patient's metabolism is increased 20 per cent during pregnancy and it begins to return to normal as soon as delivery is effected, it seems rational to at least temporarily break the drop in metabolism by the administration of small doses of thyroid. Distinct symptomatic relief has been

Table IV. Previous Toxemias

Type of Toxemia	Age	Parity	Living child	Thyroid dose	Normal Preg.	Elevation B.P.
Increased BP after delivery	22	P1-Gr. II	1	1½	1	
Eclampsia stillborn Inc. BP & edema	21	P0-Gr. II		2	1	
Increased BP and edema	26	P0-Gr. I		1½	1	
Hypertension, stillborn, albuminuria, hypertension	26	P1-Gr. III	1	2	1	
Pre-eclampsia at 36 weeks	27	P1-Gr. II	1	2	1	
Edema and albuminuria	27	P0-Gr. I		1	1	
Pre-eclampsia—induced at 36 weeks	27	P1-Gr. II	1	1½	1	
Edema and albuminuria	28	P1-Gr. III	1	1	1	
Toxemia? first pregnancy	29	P1-Gr. II	1	1	1	
Eclampsia	29	P1-Gr. II	1	1½	1	
Eclampsia at 26 weeks—stillborn	29	P0-Gr. II		3	1	
	35	P1-Gr. III	1	0	1	Inc?
	38	P2-Gr IV	2	3	34 wks.	
Toxemia and stillborn	29	P0-Gr. II		1½	1	
Known albuminuria for 3 years	30	P0-Gr. I		2	1	
Known albuminuria, intermittent—8 years	30	P0-Gr. I		1	1	
Toxemia, edema, Inc. BP, Induced labors	31	P2-Gr. III	2	1	2	
Toxemia? Induced at 37 weeks	31	P1 Gr. II	1	2½	1	
Eclampsia at 37 weeks	31	P1 Gr. II	1	1½	1	
Chronic nephritis	32	P0-Gr. I		1½	1	
Hypertension and albuminuria—last pregnancy	36	P5-Gr. VI	5	1½	1	140/86
Hypertension since first pregnancy	36	P1-Gr. II	1	2	1	
Hypertension and albuminuria		P1-Gr. II		1½	1	
Total of 21 Patients			20		24	

made a normal weight gain, had a normal blood pressure and her urine was negative. In her 26th week of pregnancy, she had in less than two hours three severe convulsions. She did not respond well to conservative management and after seven days without marked improvement the uterus was emptied. Six months later a BMR was reported as a minus 21 with a blood cholesterol of 278 mgm. per cent. She was placed upon thyroid and the dose increased to three grains. About a year later she became pregnant and went through pregnancy without complications. Six years later, having been off of thyroid for a couple of years, she had a mild toxemia in the last trimester of pregnancy with albuminuria and increased blood pressure. Labor was induced at 37 weeks. She is now pregnant again and thyroid was started at the onset of her pregnancy. Her blood pressure in early pregnancy ranged between 130/86 to 144/90. She is now 34 weeks pregnant and her last two blood pressure readings have been between 110/70 and 120/76.

#### 5. Physiological Tonic—Postpartum

There are a good many patients in the postpartum

obtained in these patients. The required dose is usually small and as a rule it can be discontinued after a few weeks.

Table V. Physiological Tonic—Postpartum

16 patients—Chief complaints—dizziness, fatigue, nervousness. Symptoms—improved

\* This group of patients is not counted in the total figures.

#### Discussion

There have been presented 267 selected patients who were given thyroid medication during pregnancy. I have purposely left out some patients who I thought were inconsistent with their dosage of thyroid and some patients who were given thyroid when they were bleeding and who terminated their pregnancies so quickly that the medication could have no conceivable effect. Thyroid medication was started both before and after conception. The 267 women, while under thyroid feedings, had 336 pregnancies of which there were 311 live births at term and four premature live births. Eight pregnancies terminated with stillborn fetuses, congenital

abnormalities or babies that were born alive and died. There were 11 spontaneous abortions and two ectopic pregnancies. Two hundred forty women of this same group, prior to the administration of thyroid, had had 231 pregnancies of which 183 came to or near enough to term to have living children, and 41 aborted, were stillborn or abnormal in some other way.

In the treated cases there was an uncorrected fetal salvage of 93.7 per cent, and if corrected by the removal of the abortions and ectopic pregnancies, there was a fetal salvage of 97.6 per cent. In the untreated cases there was an uncorrected fetal salvage of 83 per cent. The statistics on the treated cases compare favorably with the figure of fetal salvage for the state of Kansas which was 98.2 per cent in 1947.

In this series of cases there was no maternal mortality. There was only one patient who had a blood pressure level above the arbitrary normal of 140/80. She also had a mild proteinuria.

It is not my intention to attempt to give the impression that thyroid feedings per se are entirely responsible for the results in the low fertility patients who conceived and went to term, or the bleeding patient who didn't abort, or the general results that we obtained. Each of these patients had careful physical examination with her prenatal care. Overweight patients were reduced before conception. Dietary deficiencies, particularly protein deficiencies, were corrected. Chronic pelvic infections were eradicated. They were given supportive treatment whenever indicated.

It must also be borne in mind that many of these patients were extremely desirous of bearing a child, or another child, and that they were most cooperative and diligent in their efforts to accomplish that end. Clinical results are difficult to evaluate. However, as manifested by the cases reported above, I believe that thyroid feedings are of great importance in the obstetric field. I feel we must make a diagnosis of clinical and subclinical hypothyroidism by history and physical examination, by therapeutic trial of small doses of thyroid gradually increased to the point of tolerance, rather than be guided too closely by the minus 10, plus 10 reports from basal metabolic readings.

#### Summary and Conclusions

There have been presented 336 incidences of pregnancy in 267 patients where thyroid medication was used. The clinical results would indicate that the use of thyroid in pregnancy is important in clinical and subclinical hypothyroidism. Those conditions that should be most benefitted by thyroid are hormonal imbalances producing low fer-

tility, blighted ova, and abortion. The metabolic disturbances affecting water and salt balance, protein balances and storage, and cellular irritability should be improved by thyroid feedings, thereby decreasing the percentage chances of the development of severe grades of toxemia of pregnancy.

Further studies on the use of thyroid feedings in pregnancy should be made before its clinical importance can be completely evaluated.

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Discussion by H. C. Willumsen, M.D.  
St. Joseph, Missouri

The essayist is to be congratulated on the careful analysis and results obtained in this considerable series of cases. The prior-to-treatment cases serve as controls and permit the drawing of some valid conclusions as to the effectiveness of thyroid indication.

In the group of physicians with which I am associated, the subjects of thyroid deficiency and the indications for the administration of thyroid have been frequently discussed. From the clinical standpoint, the use of the drug in many cases seems justified; however, there is some need for caution in its administration, especially in large doses. In the general absence of large controlled series of cases, and with the scant experimental evidence available, the apparent good results in some types of cases, following administration of this hormone, must be viewed with reservations.

The story of reproductive physiology is largely a story of its endocrine mechanism. These mechanisms exert their influence from conception, through nidation, prenatal life and postnatal life; and, as Novak states, "are responsible for the individual's physical and mental attributes and in them confers on him the privilege of immortalizing these attributes by propagating his own species." The evidences of a functional relationship of the thyroid with the gonads is based chiefly upon clinical observation of cases such as have been so well presented by Dr. Pyle tonight.

Very little evidence of a really experimental na-



ture is available. We know that the thyroid increases in size with puberty, that there is slight hypertrophy of many glands at the time of the menses and during pregnancy and lactation; that increases in size have been noted during periods of sexual activity, and in animals after castration. We are aware of the frequency of menstrual disorder in cases of thyroid dysfunction. Retarded ovular maturation with the development of marked cystic degeneration of the ovaries has been observed in clinical thyroid cachexia. Thyroid hypoplasia is associated with general body and sexual hypoplasia and reduced fertility. Even after sexual maturity thyroid extirpation in animals has an unfavorable influence on fertility. Despite these and many other clinical data which correlate closely thyroid and gonadal functions, no specific hormonal connections have been verified and there is no exact knowledge of the relationship implied.

Since, however, the relationship of the other many endocrinal products to pregnancy is equally poorly understood, and the clinical data obtained through their use even less impressive, it is natural and understandable that a readily available and inexpensive medication such as thyroid should be frequently administered in cases exhibiting some type of endocrine dysfunction, especially when clinical evidence of hypothyroidism, mild or marked, is present.

The basal metabolic rate and serum cholesterol concentration are the laboratory procedures employed in determining the existence of the hypothyroid state. However, as pointed out by Dr. Pyle and others, hypothyroidism need not be excluded even if these are normal. If, according to Berglas, withdrawal of thyroid medication is followed by a considerably increased blood cholesterol concentration, thyroid deficiency may be presumed. We are apparently better guided in our indications for medication by the clinical signs and symptoms.

According to Hamblen, the daily hormonal output of the thyroid gland is equivalent to  $\frac{1}{3}$  mgms. of thyroxin. The form of hormone release from the gland is unknown, but it is then combined with colloid. How much of the thyroid we administer is actually metabolized, has not been determined.

The use of the hormone as a "Physiological Tonic," prenatally, during pregnancy and postpartum, seems justifiable provided the existence of mental and emotional changes, anemias, infectious processes and simple exhaustion and fatigue due to overwork and lack of sleep, have been considered and remedied as adequately as possible. In Dr. Pyle's series of cases there was a three-fold increase in normal pregnancies and a reduction of

abortions to less than one-half where the drug was used as a tonic before and during the pregnancies.

Since thyroglobulin, according to Hamblin, enhances the oxidational processes of all body cells, mobilizes protein, controls blood lipid levels, exerts a glycogenolytic action, prevents abnormal storage of water and sodium chloride (probably by facilitating urinary filtration), increases the blood plasma volume and the oxygen dissociation curve of the blood and enhances the activity of the vegetative system, it is logical to conclude that its administration may aid in preventing the development of the toxemias of pregnancy. This point is difficult to evaluate, however, and in those cases presented tonight it is known that careful dietary control was maintained, which in itself may have produced the beneficial effect.

My use of thyroid in obstetrics has been pretty well limited to cases with previous and threatened abortion and in the infertility problems. Here again, because of multiple causal factors and treatments involved, it is difficult to arrive at clear conclusions as to the real beneficial effect of the thyroid medication alone. Dr. Pyle reports 26 pregnancies, 21 carried normally to term, in 19 patients infertile for more than a two-year period.

The most interesting results are in the previous abortion group, where, prior to medication, there was an 84 per cent abortion rate. After medication, this rate was only 1.3 per cent. Here, certainly, one must be impressed with the value of this medication since these results are superior to those reported in controlled series with the use of any other type of medication.

In attempting to evaluate the hypothyroid state (and the use of thyroid) in a small series of my own infertility problems, I found that the BMR was normal (+10 to -10) in 63, below normal in 30 per cent and above normal in seven per cent (all of these tests were made in the same laboratory by the same technician). However, as indicated by Dr. Pyle and others, the BMR was on the minus side in 74 per cent of the cases. When viewed from the standpoint of the main infertility factor involved, it was found that 17 per cent had below normal BMR's when the male factor only was involved, whereas 33 per cent of the BMR's were below normal where the ovarian factor was primarily involved.

Seventy-four per cent of all patients received thyroid medication in amounts ranging from 1 ss to iii grains daily. Thirty-two per cent of all patients became pregnant, all of these while being treated with thyroid. Of 24 cases with ovarian factors primarily involved, 10, or 42 per cent, became pregnant while

on thyroid treatment. Of 14 cases with male factor only involved, four, or 28.5 per cent, became pregnant, and of 12 cases with other factors predominating, only two, or 16.6 per cent, became pregnant. These figures suggest some beneficial action of thyroid administration on ovogenesis and spermatogenesis.

My own results with cases of one or repeated previous abortions have not been so favorable, but thyroid has not been consistently administered. Dr. Pyle's results should stimulate further use of thyroid in this type of case.

The ill effect of thyroid medication in some, especially in the older age group of patients, is known, and despite the fact that the average normal individual can tolerate large doses without apparent ill effect, these dangers cannot be entirely disregarded. Angina pectoris or myocardial infarction can result from an increased demand on an inadequate coronary circulation. A less serious but more frequent complication is muscle pain or cramps which may be related to water migration or anoxia due to sudden increased tissue oxygen demand. Muscle tenderness, occasionally fever, nausea, and rarely vomiting, may occur following the initial administration of (large doses of) desiccated thyroid. A small dose may produce as deleterious an effect as a large one; the action of the drug is cumulative. There is some evidence that large doses of thyroid may inhibit normal gonadal function.

I wish to compliment Dr. Pyle on his presentation this evening and to thank the Society for the privilege of discussing it.

Discussion by Le Roy Goodman, M.D.,  
Kansas City, Missouri

The only thing that I have to add to this is from the largest clinic in the United States that has studied thyroid diseases thoroughly, that of Dr. Means where Dr. Lerman is chief of the clinic. He wrote me the other day, and his private opinion is this: "Thyroid is very useful in the management of patients with various gynecological disturbances, such as metropathia hemorrhagica, irregular periods without local cause, and sterility. One must remember that many patients with myxedema before the menopause have metropathia hemorrhagica. The administration of thyroid overcomes this."

In obstetrics there are two types in which a great deal of thyroid is used. First, patients with colloid goiter and a low metabolism—the purpose is to prevent possible abortion and perhaps prevent cretinism and mongolism. Thyroid etiology of mongolism is not a well documented fact. Second, thyroid is useful in the treatment of habitual abortion.

Although large doses of estrin and progesterone have their vogue, I am certain that thyroid is the major answer to this problem. The dosage has to be large to tolerance, four to six grains daily and should be started early enough in the pregnancy and kept up almost to term. Thus far I have treated successfully 30 patients with habitual abortion, three or more miscarriages, by this procedure alone without resorting to the use of estrin or progesterone.

Now I would like to reiterate what Dr. Pyle and Dr. Willumsen have already told you: the necessity of raising and maintaining the metabolism of women who plan to become pregnant. It is desirable that any hypothyroidism that may be present in the father be corrected before pregnancy is undertaken. If parents are living in a goitrogenic zone they should also use iodized salt. A normal concentration of thyroid hormone appears to be necessary for the growth and development of the fetus.

Although patients with myxedema may sometimes become pregnant, even while suffering from amenorrhea, they are much more likely to be sterile and when they do deliver, the offspring is more likely to be cretinoid than from a woman whose thyroid function is normal. The level of metabolism should be raised to the normal and maintained there by the proper dose of thyroid. Pregnancy creates an extra demand for thyroid secretion and the thyroid gland may not provide this extra amount in spite of the hyperplasia occurring in pregnancy. After delivery the thyroid may not always return to normal, perhaps due to the lack of pituitary thyrotrophic stimulation. Hypothyroid patients should get both iodine and thyroid some months before pregnancy is attempted to overcome their sterility and to lessen the risk of abortion. Iodine and thyroid alleviate the mother's demand for thyroxin from the fetus during the last weeks of pregnancy and allow the infant's thyroid to develop.

Although basal metabolic rates rise 20 to 30 per cent during the last months of pregnancy and it has been suggested that this represents the sum total of both the maternal and fetal metabolism, there is no true hyperfunction pathologically. It is frequently referred to as a compensatory response to the increased demands of pregnancy.

Frequently the thyroid hypertrophy tends toward the colloid type of goiter and the secretion of which is inadequate for the extraordinary demands of pregnancy. There is a constant decrease in iodine content in the thyroid in pregnancy and when the iodine content falls below 0.1 per cent of its dried weight of the gland, it undergoes hypertrophy or hyperplasia and may form a colloid goiter. This is especially true if there is insufficient iodine for the discharge of



thyroxin from the gland when the gland is stimulated to over-production. The lowered iodine may be inadequate for increased demands at puberty, pregnancy, sometimes during the menses, and also at menopause. Then a colloid or simple goiter is not an infrequent result. When the iodine is particularly meager, as in pregnancy, there is a noticeable enlargement of the thyroid gland.

Thyroid does not correct the pituitary origin of sterility nor that due to a primary defect in the gonad. It is a peculiar contradiction that in both hypothyroidism and hyperthyroidism there may be an excessive flow or amenorrhea. It is absolutely necessary to distinguish between the lack of thyroid and the lack of the ability of the gonadatropins or the ovarian ovulation to produce fertility.

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## BLUE SHIELD

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From time to time it is desirable for us to understand something of the problems and opinions of doctors in other parts of the country in regard to prepayment of medical care. Because of the valuable information it imparts as well as the picture of progress it shows in the development of the prepayment plans in Wisconsin, a recent article by H. H. Christofferson, M.D., president of the Wisconsin Medical Society, is quoted in part below.

"For more than a decade the State Medical Society of Wisconsin has given a great part of its time and its budget to prepaid health care programs. This effort is inspired by the physicians themselves, spurred on, of course, by the threat of compulsory nationalized medicine. But, fundamentally, these years have been devoted to a search for the best means of meeting the economic and social needs of the patients we serve as well as their scientific needs. Much has been learned. Some unique and significant strides have been made. But the search and study must still go on if progress is to continue.

"At the end of World War II, after some years of study and investigation, the Society launched its prepayment programs. There were few patterns to go by, but the Society knew its obligation to establish plans that would give the low income people of Wisconsin the opportunity to voluntarily budget the costs of medical care within the means of their pocketbooks. The principle of 'full payment' for the surgical expenses of certain low income groups was adopted. Full payment was quickly accepted by the public. It is not difficult to see why. In 1946, the median family income was \$2300, with more than 40 per cent of the families earning less than \$2,000 annually. These people were desperately seeking a means of obtaining the benefits of modern scientific medicine while preserving the self-respect that every American seeks and enjoys when he can 'pay his own way.'

"Now, five years later, nearly 800,000 Wisconsin citizens have surgical and medical insurance coverage through the Wisconsin Plan and the Blue Shield

plans. Despite the marked upgrading of incomes in recent years—the median family income is now \$3,000—the need and demand for full payment is as great as ever.

"The reason is apparent from a Federal Reserve Board survey quoted in the June 29 issue of the *U. S. News and World Report*. The Board has found that in 1950 nearly 36,000,000 families in the United States had incomes under \$4,000 per year. This is nearly 68 per cent of the families in the nation. Seven million of these earned less than \$1,000 during 1950. Nine million families earned between \$1,000 and \$2,000 that year. Ten million earned between \$2,000 and \$3,000, and another 10 million between \$3,000 and \$4,000.

"Nearly 6,500,000 families earned between \$4,000 and \$5,000; 7,000,000 between \$5,000 and \$7,500; and 3,000,000 over \$7,500.

"So far as paying the costs of health care is concerned, nearly 80 per cent of the families today find themselves in almost the same circumstances as a similar number of people in 1946, when the plans began. Their needs for 'full payment' are just as pressing now as then. This is a problem that the physicians of Wisconsin must face up to if the principle of 'full payment' is to continue as one of the most unique and significant social developments of our day.

"The wisdom of full payment for the low income groups of people has proved itself beyond question. In it lies a respectable and desirable solution to the problem of budgeting for medical and surgical expenses. Without doubt, it provides one of the best arguments against those who would socialize medical care. We have tried it. We know it works. We have an obligation to continue and to improve this device of prepayment in the best interests of both the profession and the public."

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Blue Shield medical care plans have enrolled 21 million persons in the United States and Canada, according to an announcement made recently by the Blue Shield Commission, Chicago. More than six million members were enrolled during the past year. There are now 115,000 doctors sponsoring the 77 Blue Shield plans.

## PRESIDENT'S PAGE



Dear Doctor:

I would be pleased to meet each and every member of our Society during the approaching yuletide holiday to personally extend the season's greetings. This pleasure is not within the realm of realization, so I shall utilize this page to wish you a Merry Merry Christmas and to convey my sincere best wishes for good health, happiness and success throughout the New Year.

Always sincerely yours,

*Chas. Benage*

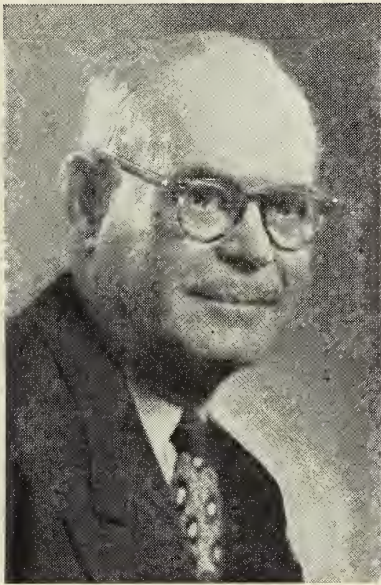


## EDITORIAL COMMENT

### Dr. Croson Memorial

The Kansas Medical Society will remember Franklin Roy Croson, M.D., for many things. His warm, genial, friendly personality will never be forgotten by those who knew him. His interest in life, his humanity, his idealism will stay within our memory. His untiring efforts in the field of medicine, his long and never ending services to this Society culminating in a term as president have left an indelible impression that will remain.

Greater, perhaps, than all these attributes was his deep and abiding concern for the future of his chosen profession. He had a personal interest in



FRANKLIN ROY CROSON, M.D.

students now in school and worried about their progress and their welfare. The Student Loan Fund of \$10,000 for the University of Kansas School of Medicine was established by this Society during his term as president. He took more pride in that project than in any other accomplishment of his year. This was a tangible service, an expression of interest in medicine's future, a gift from the profession itself.

The Council has again voted to add another sizable contribution to this fund. It will be given to the Endowment Association of the University of Kansas and loaned in small amounts to senior students at the School of Medicine who need assistance. These loans will be repaid at a low rate of interest to become of service again and again.

This fund will now permanently become the Dr. Croson Memorial Student Loan Fund. Much additional money is needed to bring the total to a point

of maximum service, and individual contributions in any denomination, from the profession or other persons, will gladly be accepted. Checks may be sent to the Kansas Medical Society, 512 New England Building, Topeka, Kansas.

Individual participation is entirely voluntary; the amount may be as large or as small as you wish. It will all go to help needy medical students complete their final academic semester. It will be repaid and be used many times as the years progress. Your gift will be a helping hand to a young man or woman just at the threshold of the profession of medicine. Your gift will be a gesture of friendship to the student who will carry the practice of medicine and its ideals forward into the future.

It will also be something in addition to all this. It will be given in memory of a friend, a fine citizen of Kansas and a truly great physician to whom the practice of medicine was the highest calling on earth.

### Dues for 1952

Local, state and national medical society dues become payable as of January 1, and since the subject regularly raises questions in the minds of the membership an attempt is here made to outline the necessary procedures.

Dues for members of the Kansas Medical Society for the year 1952 remain at \$25. Payment is required, according to the by-laws, prior to February 1 from all members except those declared by the component society to be honorary, in service or on leave of absence. A dues exempt status is obtained through the county society and is based upon the following criteria. An honorary member is awarded this distinction because of age, outstanding service to the medical profession as well as his society, and a reduced practice limiting his professional income. An in service member may be relieved of the payment of dues for the duration of his active stay in the armed forces. The leave of absence category is a temporary classification relieving the physician from the payment of dues for a limited period covering such situations as an extended illness or a period of graduate study. Members in any of the above classifications retain full privileges but are exempt from the payment of annual dues or special assessments.

All other members of the Kansas Medical Society are required to pay dues. This payment, together with dues required by the county society, will be submitted to the secretary of the component society to which the member belongs. The secretary will forward to the office in Topeka that portion of the

check that is required by the state society. This should be completed prior to February 1, 1952, because only fully paid up members are considered in tabulations apportioning delegates for the House of Delegates of the Kansas Medical Society. Each county society is allotted one delegate for 20 members or major fraction thereof. Delinquencies in the payment of dues can adversely affect a county society's representation.

In addition to the dues payable to the county and the Kansas Medical Society, dues are also required for membership in the American Medical Association. For the year 1952 these also remain at \$25. It is important to note that A.M.A. dues should be paid on a separate check made payable to the American Medical Association. Some component societies keep a record of these payments. In that instance, the check should be submitted to the secretary. Where this custom is not followed, the A.M.A. dues should be mailed to the Kansas Medical Society, 512 New England Building, Topeka, Kansas. At this office the payment of A.M.A. dues will be recorded and the check will be forwarded to the A.M.A.

The Kansas Medical Society endorses and recommends A.M.A. membership but has taken no action to make this mandatory. There are many distinct advantages already familiar to the doctors of Kansas that make A.M.A. membership desirable. By way of example, A.M.A. membership dues include a subscription to the Journal of the American Medical Association. The non-member wishing to subscribe to the Journal will pay a subscription cost of \$15. A great many other examples might be cited and will be supplied upon request.

Regulations covering this subject differ in certain respects between the American Medical Association and the Kansas society. To begin with, all members are required to pay the A.M.A. dues regardless of their state dues exempt classification. Members having passed the age of 70 years may apply directly to the secretary of the A.M.A., 535 North Dearborn Street, Chicago 10, Illinois, for an honorary classification. Physicians who are exempt from the payment of local or state dues may also be exempt from the payment of A.M.A. dues, but only if an additional request for such exemption is made by the county society and an endorsement of this request is given by the Kansas Medical Society. And then it can be accepted only if it is established that the payment of A.M.A. dues would constitute a financial hardship, or if the member is a commissioned officer in the medical corps of the armed forces, or if the member has retired from active practice, or if he is enrolled in an extended course of graduate education.

The fact that these categories have already been assigned by the local societies has no bearing on the

member's status regarding the A.M.A. A separate request must be made for each member. It should further be noted that members exempt from the payment of A.M.A. dues will not receive the Journal of the American Medical Association except on the payment of the usual subscription rate.

Members of the A.M.A. are entitled to all privileges with the exception of holding office. This is restricted to fellows of the A.M.A. To become a fellow, the physician must first be a member and then apply directly to the secretary of the A.M.A. for fellowship. This is granted him following action of the Judicial Council. Prior to 1952 there were fellowship dues in addition to membership dues. Recent action by the Board of Trustees has eliminated dues for fellows, but all other requirements remain as before. Fellowship in the A.M.A. is a category controlled entirely by the A.M.A. No other medical organization has anything to say regarding who is or may not be accepted into this category, but again requests must be made by the individual physician and all previous requirements such as A.M.A. membership must be met at the time the request is made.

There is one further note to add in this discussion. Payment of delinquent dues to the A.M.A. will be required before current dues may be acknowledged. The physician who failed to pay his A.M.A. dues for 1951 and sends a check next year will discover that he will not receive the Journal because those dues will be credited to his 1951 account. Many differences of opinion have arisen in this regard. Should any physician feel that his dues are paid he may write the Executive Office of the state society or to the A.M.A., or both, to have this question resolved.

### American Medical Education Foundation

The American Medical Education Foundation is a relatively new project that originated within the A.M.A. It was endorsed by the House of Delegates and has since grown in effectiveness among various lay organizations.

The purpose behind this foundation is readily explained. It is a well known fact that many of the nation's 79 accredited schools of medicine are in serious financial difficulties. The Congress of the United States has demonstrated considerable interest in offering federal appropriations to aid these schools. To counteract this possibility, to prevent the subsequent domination of medical education by political means, to demonstrate in a practical fashion medicine's belief in the free enterprise system, the A.M.A. organized this non-profit education foundation. Except for the smallest possible administrative expenses, all money received will be appropriated to the various schools of medicine in this country.



It will be given without strings or conditions, to be used as needed by the school. It represents the American way of providing the people of this country with a continuing supply of physicians.

It is proper that this proposal should have its inception within the medical profession. It represents one of the finest projects to come out of the A.M.A. in recent years. Not only did the A.M.A. plan this organization but was the first to give a very sizable contribution to put the project in operation. It is now almost one year since the beginning and the first year's goal of one million dollars is only two-thirds achieved. The A.M.A. therefore is now requesting the cooperation of individual doctors to make contributions to this foundation.

It is tragic that after concentrated effort over the period of a year only .003 per cent of the doctors in the United States have contributed financially toward the support of medical education. That at least is the figure first quoted in the Senate of the United States and more recently reluctantly admitted by the A.M.A. to be correct. A few weeks ago actual statistics showed that the state leading all others in this country achieved a record of only 3.56 per cent.

Many things might be said in this regard. For instance, during the battle against socialized medicine the profession was repeatedly criticized for not bringing forth some form of positive action. This is positive action of a type that might offer an important reply to proponents of federal domination of the practice of medicine.

The ease with which the physician might contribute is another subject that could be developed at length. The American Medical Education Foundation has a tax exempt status based on Section 101(6), declaring it to be a scientific program. Therefore, money contributed to this foundation is deductible from the physician's income tax. It is further made convenient because each donor may specify the school to which he wishes his contribution to apply. The school will receive the donation and will be informed of its source. Donations may be in any amounts and will be greatly appreciated, regardless of how small they are.

Checks should be made payable to the American Medical Education Foundation and mailed directly to 535 North Dearborn Street, Chicago 10, Illinois. This is a voluntary program but is a contribution that will meet a most urgent need and one that must have the approval of every physician. The gift will be a tangible expression of the donor's interest in aiding medical schools, but it also presents a clear statement of the donor's belief in the system of free enterprise. It is hoped that Kansas physicians will take special notice of this project and will support it at this time.

## Don't Give Your Life for Christmas

M-Day—the day on which traffic will claim its millionth victim—will occur some day this month . . . unless we make an all-out effort to avert it. No one knows just when or where this tragic event will occur. It could be your town. It could be right at the height of the Christmas festivities. However, vigilance on the part of every pedestrian and motorist can help postpone the millionth fatality . . . can help make sure the millionth victim will not be a citizen of your town.

It is ironic that the very things that make for Christmas cheer—the shopping, the parties, the constant rush—also make for traffic accidents. People are not alert to danger when they are preoccupied with the social aspects of the holiday season. Nor are they as receptive to safety advice at this time of year as they are in less hurried seasons. This factor makes it necessary for us to be very careful about overdoing the "grim" aspects of holiday traffic hazards. Pointing out these dangers and giving advice as to how they can be minimized, or avoided entirely, without becoming a "wet blanket" forces the safety worker to walk an extremely thin line between two extremes.

The title and the two paragraphs above were taken from the December release of the Traffic Department of the Kansas State Highway Commission. Too much emphasis cannot be placed on the subject of safety during this season when holiday hazards are added to the risks that are with us 365 days of the year.

Three factors contribute to the heavy holiday toll, increased social drinking with its attendant spirit of festivity, reduced visibility because of winter weather, and wet and slippery roads. Since drinking is an individual problem, it must be approached from that angle. But even the total abstainer cannot dismiss the subject—he must make allowances for the "other" driver who may or may not be temperate.

Some of the hazards of winter weather may be eliminated by proper vehicle maintenance. Included under that heading are a properly functioning heater to deter the formation of steam on the car's windows, a windshield wiper, a defroster, an ice-scraper to keep the windshield free of ice and snow at all times, and proper headlights and tail lights.

The use of tire chains is recommended when highways and streets are covered with snow or ice. Highway Commission tests have shown that a car with chains, traveling at 20 miles per hour, can stop on packed snow in 40 feet; without chains in 69 feet. On icy roads the difference is equally impressive. At 20 miles per hour a car with chains

can stop in 88 feet; without chains, in 169 feet. During wintry weather ice patches may be expected on seemingly dry roads on curves, bridges, in shaded spots and beyond hillcrests, and each driver should be alert for such perils.

Those who drive on slippery surfaces without chains should remember to keep a steady foot on the accelerator. Removing the foot from the throttle suddenly and braking quickly can throw the car into a serious skid.

Added care in driving pays dividends in safety. The December slogan of the Highway Commission should be remembered—"Don't kill your holiday by accident."

### Improving Physician-Patient Relationship

As part of a continuing campaign to improve physician-patient relationships, the American Medical Association has produced for distribution to the medical profession a plaque for display in the doctor's office. Addressed "To all my patients," the plaque carries the following two sentences.

"I invite you to discuss frankly with me any questions regarding my services or my fees. The best medical service is based on a friendly, mutual understanding between doctor and patient."

It has been stressed repeatedly that the medical profession would have few public relations problems if each physician spoke frankly and sincerely with each patient on the matter of services and fees. The invitation on the plaque will be evidence to the patient that his physician is willing to arrive at a mutual understanding and will welcome a discussion of medical problems and their related economic factors.

A description of the plaque and complete information on size, appearance, cost and orders will be found in the display on Page XIV of this issue.

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## ACTIVITIES OF MEMBERS

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Dr. Ray Meidinger, Hiawatha, announces that Dr. Maurice S. Wessell is now associated with him in practice. Dr. Wessell formerly practiced in New York state, served in the Army, and since 1947 has been chief surgeon at the VA hospital in Little Rock and associate professor of surgery at the University of Arkansas.

\* \* \*

Dr. Robert Jordan has returned to practice in Lawrence after having spent three years in Minnesota as a fellow in internal medicine at the Mayo Foundation. As a result of his study he received the degree of Master of Science in Medicine from the University of Minnesota.

Dr. Frederick Smith, Wichita, was elected president of the Sunflower Boys State Committee at the annual meeting held in Wichita in October.

\* \* \*

Dr. L. G. Schwartz, Topeka, has opened an office in Hoyt and will practice there on Monday and Thursday mornings.

\* \* \*

Dr. J. F. Casey, manager of Winter VA Hospital, Topeka, and Dr. William F. Roth, chairman of the department of psychiatry and neurology at the University of Kansas Medical Center, Kansas City, spoke as representatives of the two organizations at the opening session of a postgraduate course in psychosomatic medicine held in Topeka early in November.

\* \* \*

Dr. A. J. Wray, Wichita, who has been stationed at Fort Sam Houston, has been transferred to Fort Benning, Georgia, and is now attached to a paratrooper unit.

\* \* \*

Dr. DeWitt S. Lowe, Hiawatha, was one of 29 alumni of Hastings College at Hastings, Nebraska, to be cited for "outstanding achievements and services which reflect honor on the college." The citation was presented at the school's 70th anniversary celebration, October 27.

\* \* \*

Dr. Harle V. Barrett, director of the Leavenworth City-County Health Department, has been assigned to duty with the Army at Fort Ord, California. His successor at Leavenworth is Dr. H. S. Blesse, a former Army medical officer.

\* \* \*

Dr. John G. Hoffer, formerly of Wichita, has opened an office for practice in Medicine Lodge.

\* \* \*

Dr. Charles H. Lerrigo, Topeka, has been receiving favorable comments by critics on his recently published book, "The Better Half of Your Life."

\* \* \*

Dr. Jerome S. Menaker, Wichita, was guest speaker at a meeting of the Wichita chapter of Epsilon Sigma Alpha sorority recently. His subject was "Physical and Mental Health of the Career Woman."

\* \* \*

Dr. A. P. Cloyes, El Dorado, discussed the treatment of burns before a recent meeting of the Graduate Nurses' Club in that city.

\* \* \*

Dr. Funston Eckdall was chairman and Dr. C. W. Partridge assistant chairman of activities in Emporia in connection with the observance of Diabetes Week, sponsored by the Lyon County Medical Society.



Dr. C. H. Benage, Pittsburg, spoke on "Prepaid Medical Insurance the Voluntary Way" before the November meeting of the Woman's Auxiliary to the Sedgwick County Medical Society.

\* \* \*

Dr. John H. Lathrop, Concordia, has been appointed medical examiner for the Civil Aeronautics Administration in that area.

\* \* \*

Dr. Eldon S. Rich, who has been practicing in Bethel, has opened an office for practice in Buhler.

\* \* \*

Dr. Charles Pokorny, Halstead, has been notified that he has passed the sub-specialty examination in pulmonary diseases given by the American Board of Internal Medicine.

\* \* \*

Dr. F. P. Wolff and Dr. R. W. Edwards, Pratt, were representatives of the medical profession in the observance of Diabetes Week in that city last month.

\* \* \*

Dr. John B. Dixon, Parsons, spoke on medical eye problems before a meeting of social welfare case workers of Southeast Kansas at Pittsburg, November 14.

\* \* \*

A feature story about Dr. Ray Vinsant, Summerfield, was published in a recent issue of the Marysville Advocate, paying tribute to the physician who has practiced in that community for 27 years. Dr. Vinsant makes many of his rural calls by plane as he flies a Piper Cub.

\* \* \*

Dr. Paul C. Laybourne of the University of Kansas Medical Center spoke on "Emotional Problems of Children" before a recent meeting of the Parker P.T.A.

\* \* \*

Dr. Elbert D. McNeil, who has practiced in Satanta for two years, closed his office last month to report for duty with the Army at San Antonio, Texas.

\* \* \*

Dr. J. D. Clark, Wichita, was one of the speakers at the first annual meeting of the Kansas Association of Licensed Nursing Homes, Inc., held at Wichita in mid-November.

\* \* \*

Dr. Irene Koenke, Halstead, Dr. Frances Schiltz, Wichita, and Dr. Cora E. Dyck, McPherson, are now touring South America. From December 2 to 8 they attended the third congress of the Pan American Medical Women's Alliance in Montevideo, Uruguay.

Dr. Warren S. Peiper, Arkansas City, has become a diplomate of the American Board of Radiology as the result of examinations given in June.

\* \* \*

Dr. James O'Shea, who has been practicing with the Southwest Clinic at Dodge City for two years, went to Orange, Texas, last month to report for active duty with the Navy. He has had 13 years of naval service.

\* \* \*

Dr. Ben L. Myers, Iola, was given a gold medal and a citation last month by the Kansas City (Missouri) General Hospital "in recognition of professional services to Kansas City's less fortunate through the Kansas City General Hospital."

\* \* \*

Dr. George J. Pierron, Olathe, announces that Dr. Winston W. Wilcox, recently of Warrensburg, Missouri, will be associated with him in practice after January 1. Dr. Wilcox, a graduate of the University of Kansas School of Medicine in 1927, was a classmate of Dr. Pierron.

\* \* \*

Dr. Rex C. Belisle, who has been practicing in association with Dr. E. C. Petterson in Plainville, has been called to active duty with the Navy.

\* \* \*

Dr. Lester Bowles, Clifton, addressed the P.T.A. in that city recently on the subject of health.

\* \* \*

Dr. G. H. Grieve has returned to his practice in Turon after an absence of four months for a trip abroad with Mrs. Grieve. During his absence his practice was cared for by Dr. W. N. Mundell, Hutchinson.

\* \* \*

Dr. Clyde O. Merideth, Jr., Emporia, discussed excessive use of alcohol and the use of narcotics before the Emporia High Twelve Club at a meeting held November 16.

\* \* \*

The American College of Surgeons has supplied the following list of Kansas physicians who became fellows of the organization this year: Dr. Garland L. Campbell, Arkansas City; Dr. Philip J. Clark, Hays; Dr. Vernon W. Filley, Dodge City; Dr. Jack W. Graves, Wichita; Dr. Frank A. Rieke, Kansas City; Dr. John G. Shellito, Wichita; Dr. John F. Thurlow, Hays.

\* \* \*

Dr. DeMerle E. Eckart resumed his practice in Hutchinson December 1 after having spent a year as a lieutenant commander on active duty at the U. S. Naval Hospital in Oakland, California. He was attached to the Departments of Medicine and Psychiatry at the hospital.

Dr. and Mrs. O. U. Need, Oak Hill, were honored at a community reception on December 2 in observance of their 50th wedding anniversary and also Dr. Need's 50 years in medical practice.

\* \* \*

Dr. C. Omer West, Kansas City, addressed the Rotary Club in that city on November 20 on the subject of socialized medicine in Great Britain. Dr. and Mrs. West recently returned from a trip to Europe.

\* \* \*

A 22-room clinic built in Phillipsburg by Dr. Mary Glassen was dedicated at ceremonies held on November 25.

\* \* \*

Physicians who took part in the program for medical assistants at Arkansas City on November 18 were Dr. Clyde W. Miller, Wichita; Dr. George C. Meek, Dr. W. G. Weston, Dr. Thomas L. Hill and Dr. Bruce G. Smith, Arkansas City; Dr. Warren F. Bernstorff, Winfield.

#### Topeka Society of Internal Medicine

An organization meeting of the Topeka Society of Internal Medicine was held at the home of Dr. Don C. Wakeman, Topeka, November 7. Membership is limited to qualified physicians limiting their practice to, and interested in the continued advancement of, internal medicine or its allied medical specialties (pediatrics, dermatology, neurology, psychiatry, roentgenology, pathology, public health and other closely related fields).

Aims of the group are: to maintain and advance the highest possible standards of medical practice in internal medicine and allied specialties; to encourage and aid the continued education and advancement of practitioners of these specialties; to maintain the dignity of these specialties and the best traditions of medical ethics; to enhance fellowship among practitioners of these specialties.

Scientific meetings of a postgraduate type will be held bi-monthly or oftener and will be open to all physicians.

#### Correction ✓

Use of an erroneous word in the Cancer Supplement of the Journal of the Kansas Medical Society, published in September, 1951, is corrected here to avoid misunderstanding. The error appeared on Page 29-A in a paper by Dr. Everett D. Sugarbaker, "Carcinoma of the Breast."

The paragraph begins as follows: "Administration of *testosterone* to males with mammary cancer often produces dramatic regression, to the point where some have advocated this as a reasonable substitute for mastectomy." The word *testosterone* should have been *estrogen*.

## DEATH NOTICES

### EDWARD EMMETT HENDERSON, M.D.

Dr. E. E. Henderson, 84, an honorary member of the Cherokee County Medical Society, died at his home in Columbus, November 5, after a week's illness following a stroke. He had practiced medicine there, specializing in obstetrics and gynecology, for 42 years. Dr. Henderson was a graduate of the University of Kansas School of Medicine, class of 1907.

\* \* \*

### FRANKLIN ROY CROSON, M.D.

Dr. F. R. Croson, 59, who completed his term of office as president of the Kansas Medical Society last May, died November 7 in St. Joseph Hospital, Concordia. He had retired from practice in Clay Center several months ago after having suffered a heart attack.

A graduate of Northwestern University Medical School, Chicago, in 1918, Dr. Croson came to Kansas in 1925 and established practice in Clay Center, specializing in surgery. He was active in civic affairs and was especially interested in the Rotary Club, having attended a number of meetings of Rotary International. He had recently been made an honorary member of the Clay Center club.

Dr. and Mrs. Croson were tireless travelers and had toured extensively in the United States, Central America, South America and Europe.

After having held a number of offices in the Clay County Medical Society, Dr. Croson became a member of the Council of the Kansas Medical Society and served also as secretary of the state organization. He became president-elect in 1949 and took office as president at the annual meeting of the Society in May, 1950.

\* \* \*

### ONNIE EARLE STEVENSON, M.D.

Dr. O. E. Stevenson, 69, an active member and former secretary and president of the Labette County Society, died at Menorah Hospital, Kansas City, November 13. He was graduated from the University of Kansas School of Medicine in 1911 and began practice in Labette City, moving to Oswego in 1921.

In 1937 he went to Parsons to serve on the staff of the State Hospital for Epileptics, later becoming superintendent of that institution. He resigned that position last July, continuing on the staff as a consultant.



# Case Report from the University of Kansas Medical Center

## Obscure Miliary Tuberculosis in Aged Women

### Clinical Pathological Conference

Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, psychiatry and neurology, roentgenology, and the junior and senior classes of medical students.

#### Case Presentation

M.F., an 82-year-old white female, a deaf mute, was admitted to this hospital on August 17, 1950, with a chief complaint of "sore stomach and no appetite." She expired on August 22, 1950.

The patient was in her usual state of health until February, 1950, when she noticed the gradual onset of epigastric distress. At first the pain was intermittent in character, having no relation to food or activity, but during the last month before admittance it became constant. Until one month ago her appetite had been good but at this time severe anorexia developed. Concomitant with the anorexia she developed weakness, fatigue, and a generalized tremor. As a result of the weakness she had fallen four times during the last month but none during the last two weeks. The vomitus contained neither blood nor coffee-grounds material.

Past history disclosed usual childhood diseases of measles and mumps without sequelae. A leg abscess was drained in February, 1949, and her physician advised having it opened so that it would heal. Chest x-ray was normal in 1950.

Family history showed two children are deaf mutes, both living and well. Five children died, cause unknown in four, but one died in youth of tuberculosis.

Review of systems showed a history of frequent coryza with much phlegm being expectorated in mornings during the past nine years. This had increased in the past month. There was intermittent pedal edema not related to activity; otherwise the cardiovascular system was noncontributory. On several occasions in the past nine years her urine had appeared red. This had always been relieved by therapy from the local physician. Urine had been red for two days prior to admission to this hospital. Weight loss of unknown amount occurred during the past year.

Physical findings follow: Blood pressure was 105/55, pulse 104. The patient appeared acutely and chronically ill and pointed to the epigastrium as site of distress. She showed signs of recent weight loss. EENT studies showed redness of mucous membranes of nose and eyes, a mucopurulent discharge from nose and arcus senilis and lens opacities bilaterally. There was one non-tender firm lymph node in the left groin. The neck showed no

abnormalities, breasts contained no masses, and the lungs were clear to auscultation and percussion. There was marked prominence of the ribs. The heart showed a grade one systolic murmur at the apex. The abdomen disclosed no organs or masses to be palpable, but there was tenderness in the epigastrium—there was no muscle rigidity, and bowel sounds were normal. The extremities showed only an opening on the anterior aspect of left thigh measuring one by 0.5 cm. and draining thick foul greenish-yellow pus.

Laboratory findings follow: Urinalysis of a catheter specimen showed faint trace of albumin, numerous red blood cells, Hematest two plus, and 1-4 granular casts. Red blood count was 4,350,000, hemoglobin 72 per cent, white blood count 9,600, polys 95, filaments 92, lymphs three, and two monocytes. NPN was 28.3, creatinine 1.2, sodium chloride 87 meq., carbon dioxide 29.5 meq., sodium 121 meq., and potassium 4.5 meq.

For the first 24 hours after admission to the hospital the patient had no fever. Daily thereafter fever of 101°F. occurred. On the day of death the temperature was 102°F. The day before death, the respiratory rate increased to approximately 35 a minute and pulse to 120 per minute. She began to cough up more phlegm. Then rales were heard at the right base. She was given penicillin and supportive therapy. The patient expired at 10:05 p.m. on August 22, 1950.

Dr. Mahlon H. Delp (Chairman): The patient was 82 years of age and a deaf mute. That really should challenge the diagnostic abilities of anyone handling this patient's medical problems. There were, however, relatives available for the history but most of them were deaf mutes also.

Dr. Robert Jensen (Medicine Resident): With regard to the fluids—the first day, 2000 cc. of glucose and water were infused; the second day, 1000 cc. None were given IV on the third and fourth days. The last day, 1000 cc. blood plasma were given. The patient's death was respiratory.

Question: Were cultures made of the pus from the patient?

Dr. Jensen: No.

Question: Were any bacteriological studies made?

Dr. Jensen: There was a smear made from the pus which showed one acid fast bacillus. It was repeated and it showed no acid fast bacilli. No sputum examination was done.

Question: Did she ever have any blood in her sputum?

Dr. Jensen: No, not at any time.

Question: Did she have any nocturia?

Dr. Jenson: She had nocturia when she came in here.

Question: What was the location of the abscess?

Dr. Jenson: About two inches below the left inguinal ligament.

Question: Were acid fast bacilli looked for in the urine?

Dr. Jenson: No.

Question: Were GI series done?

Dr. Jenson: Yes. The barium enema and upper GI tract were reported as normal.

Question: Was her blood sugar elevated?

Dr. Jenson: It was 89.

Question: What was the specific gravity of the urine?

Dr. Jenson: The admission urine specimen showed a specific gravity of 1.006.

Dr. Delp: May we have the electrocardiogram now.

Dr. E. Grey Dimond (Medicine): The EKG is full of artefacts. They are not electrical artefacts but rather from tremor in the patient. Apparently all three limbs were shaking.

The rate is around 125. It seems to be sinus in origin, without arrhythmia. T waves in lead I are flattened to inverted. These could be due to po-

tassium changes. They could be due to almost anything.

Dr. Delp: Dr. Tice, you have some films.

Dr. Galen M. Tice (Roentgenology): This patient had been examined at different times by different ones in the department. We had the same difficulty that the clinicians had. We are not particularly proud of the technique of any of these films because the patient couldn't cooperate.

This film was seen by one of the residents. It is very hard to tell the exact reason for the lung markings. They were consistent with the age of the patient.

If I had reported the film I would have been a little more impressed with the softness of the shadows. I would have thought of a non-specific type of inflammatory process. Again you have to take account of the inability to cooperate. A film of poor quality resulted. The markings aren't sharply outlined.

It seemed to me in comparing the admission film with a portable film taken the day before death that there had been an increase in infiltration in the right base and appearance of fluid in the costophrenic angle. A diagnosis of bronchopneumonia was made at this time.

Our diagnosis was lung fibrosis consistent with the patient's age. Nothing was noted in the gastrointestinal tract. And the day before death, bronchopneumonia.

Dr. Max Allen (Medicine): I did not actually see this patient. The terminal event, as has been said, was undoubtedly bronchopneumonia. The abscess from the anterior left thigh seems tuberculous. It was an abscess which drained for a long time after opening. I doubt that you can accept one acid fast organism in one smear with another smear negative as very good evidence of tuberculosis. Furthermore, I think there ought to be definite evidence of spinal disease, spinal tuberculosis. If there were a psoas abscess which extended that far, Dr. Tice didn't say anything about it.

Dr. Delp: I wish to call upon Dr. Wood and Dr. Steegmann, but I think we will wait until the pathologists have told us about their findings.

#### Pathological Findings

Dr. James F. Haynes (Pathology Resident): The gross anatomical diagnosis is tuberculous abscess third and fourth lumbar vertebra, psoas abscess with a draining inguinal sinus, granulomata of the pons, bronchopneumonia, pleural effusion, acute dilatation of the heart, and duodenal ulcer.

Dr. William Wyatt (Pathology Resident): The combination microscopic and gross examination diagnoses were tuberculous periostitis with abscess formation, of the third and fourth lumbar vertebra; psoas abscess draining in the left inguinal region;

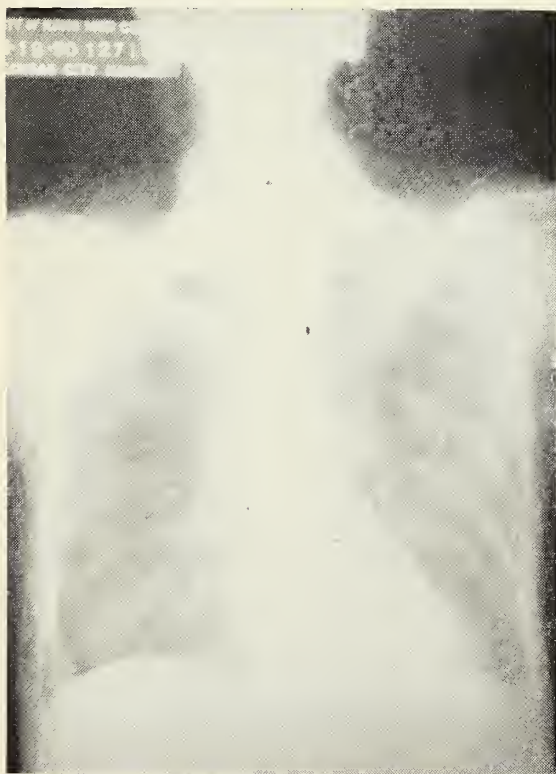


Figure 1. Lung x-ray taken the day after admission. Although of poor quality due to the patient's uncooperativeness, it shows lung markings consistent with patient's age and possibly soft disseminated inflammatory shadows.



miliary tuberculosis, involving the lungs, liver, spleen, pons, and kidney; bronchopneumonia; pleural effusion; and acute cardiac dilatation.

Dr. H. R. Wahl (Pathology): One thing I want you to remember is that this patient was 82 years old. Ordinarily you see tuberculosis occurring in middle life and early adult life. But tuberculosis does occur in senile individuals.

The gastric lesion was a small, sharply defined, punched out ulcer in the duodenum. That might account for the stomach symptoms.

Dr. Delp: It seems quite clear that this diagnosis was, I think I can say, completely missed. I choose to think that it is an excellent example of the failure of our precision instruments and our laboratory facilities to make the diagnosis when we do not have a history. I hope the lack of a history and story of the patient's illness accounts for the fact that the physical findings were not explored to the fullest extent in this case.

I think we could well spend a few minutes now trying to find out just why we didn't make the diagnosis.

Doctor Wood, can you make some comments concerning this case?

Dr. Lawrence E. Wood (Medicine): I think one thing that should be emphasized here, as Dr. Wahl mentioned, is that this patient was an elderly woman. I am sure that in my conversations with physicians the feeling is very prevalent that tuberculosis remains a disease of youth and middle age.

Within the last two years we have had a man ad-

mitted to Eleanor Taylor who was 82 years old when the diagnosis of tuberculosis was made.

I think that even a casual perusal of the literature now will indicate the importance of this problem in the aged and how we must certainly keep that possibility in mind. Churchill, in surveying the patients in Forest Heights Sanatorium in New England, reported that in approximately 1300 patients, 16 per cent were 50 years or older at the time of admittance.

I inquired of Dr. Taylor here some time ago about what his experience was at Norton. He said that over 20 per cent of his patients in residence at the hospital were 50 years of age or over.

Certainly I think that tuberculosis is being recognized much more frequently in the older age group, even though it likely does not represent increased incidence.

We should give a little more thought to those draining sinuses. Neglected psoas abscesses will very often come near a groin, down on the anterior surface of the thigh or even laterally, and some of them will even point down on the lower leg. Any sinuses which persist for such a time should certainly excite curiosity about whether or not it is a psoas abscess. I assume there wasn't any thought about underlying bone disease in this patient because nothing was said about it.

These patients represent, of course, tremendous public health hazards. They don't live very long. About one-half of them will die within a year after they are admitted to the sanatorium even though their active tuberculosis is discovered.

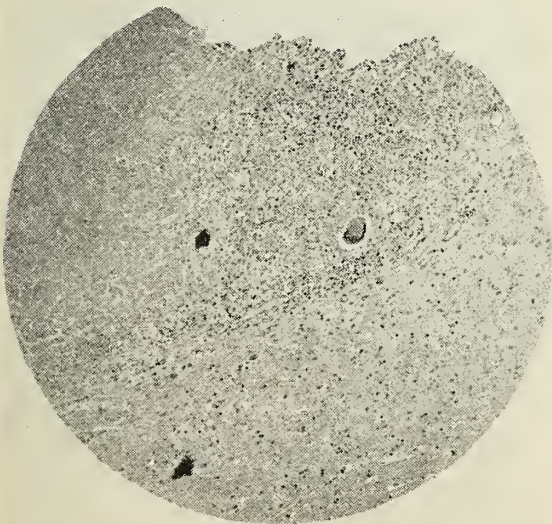


Figure 2. Miliary tubercle containing Langhans' giant cells in the pons.



Figure 3. Discrete pulmonary miliary tubercle with caseous center

Dr. Delp: Dr. Steegmann, in view of the pathological findings in the central nervous system, do you think we could have detected some findings in this patient?

Dr. A. Theodore Steegmann (Neurology): There was a history of the patient having fallen four times with an apparent explanation of generalized weakness. Lesions in the pons often will produce bilateral pyramidal tract weakness without any apparent preliminary stroke because it doesn't cause disturbance in consciousness. In an inflammatory lesion like this, such a lesion would begin and develop much more insidiously. I think this patient might have had some weakness in her lower extremities that was of neurological origin without obvious evidence of it.

Dr. Delp: Dr. Wood, what would be your comment about the significance of finding only one acid-fast organism?

Dr. Wood: I wouldn't make the diagnosis from one acid fast organism discovered in the pus. I would make more than two examinations.

Dr. Tice: I would change the film diagnosis to acute miliary tuberculosis. I would suggest tuberculous involvement anyway. I believe that in reading this film carefully, I can definitely see miliary shadows.

Going back to the film, there is a fibrotic lesion. I think that I can now see the miliary tuberculosis without any question.

In looking at the GI film there is evidence of disturbance in the lumbar spine in the first, second, and third segments. This looks more like an osteoarthritis. Perhaps it could have been picked up. Possibly you can see it. Here is the psoas muscle on the left side.

There is a psoas muscle that is being pushed out by the abscess. It is easy to make a diagnosis after you have had the pathological report.

Dr. Delp: Dr. Major, it seems to me that I can recall several occasions of seeing patients come into medical wards who had what seemed to be a relatively benign disease. At least they didn't attract any undue attention. We didn't think they were critically ill. They turned out to have miliary tuberculosis.

I wonder if we aren't frequently fooled by miliary tuberculosis in patients who come in the general wards. Has it been your experience or not?

Dr. Ralph H. Major (Medicine): I don't think it is as common now as it used to be because for some reason or other we don't get as many as we used to. In the days when we had a good deal of typhoid fever, I think the most common disease confused with it was miliary tuberculosis.

Dr. Delp: Dr. Berry, do you have any comments to make about this case?

Dr. Max Berry (Medicine): I want only to comment as to what Dr. Peete and I were talking about. I am very much surprised that the students didn't make a diagnosis on this case. That indicates to me that they are a little less astute than they should be. Certainly it should have been evident to every one of you that Dr. Lawrence Wood is here.

Dr. Delp: Dr. Wood, the diagnosis of tuberculosis rests upon the demonstration of the organism, a bacteriological diagnosis. It seems to me that very often we are hard put to make the diagnosis, to establish it clearly. Is there any advance being made in diagnostic technique? Should this patient have had a hemo-agglutination test? Should they be done routinely on patients who come in this hospital as well as routine Wassermann tests?

Dr. Wood: There is a great deal of comment that could be made about the hemo-agglutination test and I don't believe anybody knows yet what the value of it is. There seems to be considerable confusion as to how to interpret it. Of course, it is influenced by a good many things. A recent tuberculin test will influence it. I think the test is going to have to be much better evaluated and some definite method of interpretation settled upon before it should be a routine procedure. It is an interesting test, of course. If it proves to be reliable, it would be a useful addition to our diagnostic procedure.

Question: I would like to ask whether in the opinion of Dr. Wood these cases might represent a history of 50 years rather than two or three and whether this woman's original infection could have been carried over that long?

Dr. Wood: Of course your guess is as good as mine on that. We all know that tuberculosis may remain active and smolder in the lung for years and years. Older people are notorious for having accumulations of pus which have developed rather silently, particularly psoas abscess. I have no idea how long she may have had her spinal disease and psoas abscess.

I think that the pathologists reported that this dissemination is fairly recent. Of course she might very well have had an old chronic fibroid tuberculosis smoldering along for years. The family history of one of her children dying of tuberculosis is important. I don't know how old that child was.

Dr. Jenson: The child was approximately 10 years old.

Dr. Wood: Of course, the younger children are that are dying of tuberculosis, the more likely it is they contracted their tuberculosis from some member of their family. In early childhood, tuberculosis is almost entirely a family affair.

You might speculate that this patient could have had an active tuberculosis at that time and that it



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Be sure to prescribe the 10 gr. (650 mg.) size for full adult dosage.

**SEARLE RESEARCH IN THE SERVICE OF MEDICINE**

became walled off and subsequently became re-activated.

#### Summary

Here is a case chosen solely because this was a situation in which the probabilities of a good history being available were limited. It illustrates perfectly that we depend greatly upon the story of a patient's disease. When we fail to get a good story, we likewise fail to carry out the ordinary routine maneuvers of physical diagnosis which usually lead to an accurate diagnosis.

This case and the discussion emphasize that tuberculosis is not uncommon in the aged person. It poses a unique public health hazard for several reasons but importantly because of frequent lack of recognition.

Finally, miliary tuberculosis is frequently undetected immediately upon entrance to medical wards. One reason for this is that our attention in tuberculosis is focused upon characteristic pulmonary lesions seen in the x-ray. As here, these may be absent. Its clinical similarity to such febrile illnesses as subacute bacterial endocarditis and typhoid fever sometimes further confuses and delays the making of a correct diagnosis.

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## THE KANSAS PRESS LOOKS AT MEDICINE

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*Editor's Note. In this section the Journal reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.*

#### The Diabetes Test Offer

The Pratt County Medical Society should have the thanks of the community for the part it is playing in observance of Diabetes Detection week. From now through Saturday members of the society are offering free tests to any one to determine if they have unknowingly fallen victims of this disease, which ranks in eighth place among human killers. Local physicians have estimated that there are around 40 persons in Pratt who have diabetes but don't know it. To help these persons the county's physicians will accept specimens and test them free if taken to a physician's office or to the hospital. Confidential reports will then be returned to those taking advantage of this generous offer.—*Pratt Tribune, November 15, 1951.*

\* \* \*

#### Medical Needs

Socialized medicine must be a success in England, as the Conservative party had to promise to continue it, in order to win the election.

Here in the US the only favored people who

practice socialized medicine, are our well paid politicians in Washington. If it's good enough for them, why not for the rest of us?

A serious illness is a sad pitiful thing, and when a sick person has the worry of large drug and doctor bills on their minds, it's a miracle that any sick person recovers.—*Esther Conway, Hutchinson News-Herald, November 9, 1951.*

#### Color TV at Medical Center

The first color television system to be permanently installed for daily undergraduate and post-graduate medical instruction in any medical school in the world was demonstrated at the University of Kansas Medical Center on November 29. Present for the premier telecast were faculty members, other physicians, educators and technical personnel.

The pioneer black and white TV installation at the center two years ago was made possible by state funds. The conversion to a color system was financed by private funds. Equipment installed recently has been under test in the CBS laboratories for the past several months and resulted from two years of university cooperation with Remington-Rand, Inc., the Columbia Broadcasting System, Inc., and the Wilmot-Castle Light Company.

Experience with black and white telecasts has enabled surgeon-teachers at the center to learn the kind of commentary necessary for best teaching results, and has taught them how to keep their hands and instruments from obstructing the camera's view.

#### Vital Statistics on Children

Vital statistics now available reveal that deaths from heart disease and cancer among children of school age exceed in number deaths from all infections and parasitic diseases combined, it was announced recently by the Federal Security Agency. The announcement was based on a study by the National Heart Institute of the Public Health Service.

In 1948, the latest year for which complete figures are available, cardio-vascular disease and cancer deaths totaled 4,514 in the five to 19 age group. Infectious and parasitic diseases, with tuberculosis the chief cause of death, accounted for 3,990 deaths in the same age group.

There has been an overall decline in the number of deaths from diseases in childhood, including those due to heart disease and cancer, but the decline in infectious and parasitic diseases has been greater because of the use of antibiotics and improved measures for detecting and preventing these diseases.

The Fourth Annual Mid-West Cancer Conference will be held at the Broadview Hotel, Wichita, April 3 and 4, 1952. Make hotel reservations now.



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## Senior Thesis from the University of Kansas Medical School\*

## Early Diagnosis of Gastric Carcinoma

Barton Lee Fischer, M.D.\*\*

Honolulu, Hawaii

Neoplastic disease is second only to heart disease as a cause of death. Various authorities estimate that from 26,000 to 40,000 people in the United States die of gastric cancer every year. With this high incidence, gastric carcinoma has the lowest survival rate of any frequently encountered form of the disease. Mayo Clinic reports a five-year survival rate of 6.2 per cent of 11,000 cases seen at the clinic in the past 32 years.

Gastric cancer is a disease of later life, the average age being 55 years. It is more prevalent in males than in females at the rate of two to one. All sources agree that the prognosis is poor. The best reports on selected cases have only a 50 per cent five-year survival while the best overall picture is only 10 per cent.<sup>1, 2</sup>

The clinical manifestations of early neoplastic disease are meager. In those areas of the body where visualization is difficult or impossible and where no disturbance of function may occur until very late in the disease, doctors now salvage only about one-tenth of the cases.

One of the earliest signs is based on the basic nature of the carcinoma—that of invasion with ulceration and intermittent bleeding. This may persist for a year or longer and may be found associated with the earliest invasive manifestation of cancer. It is therefore of great importance in the presence of hemoptysis, hematemesis or melena to suspect cancer; or conversely to suspect cancer and search for one of the early evidences—that of bleeding.

The onset of carcinoma of the stomach is so insidious and diagnosis so difficult that even with modern techniques, results of detection are poor. In one series of 1,112 patients studied for early and late gastric symptomatology, pain was the first symptom noted in over 40 per cent of the cases.<sup>3</sup> Dysphagia, anorexia, vomiting, weight loss, eructation, bowel symptoms, weakness, nausea, and hematemesis were the first symptoms in that order. Dysphagia was the first symptom in 40 per cent of the patients whose carcinoma involved the cardia of the stomach. Resection studies indicate that pain was

registered more frequently whenever the body of the stomach was the site of origin.

If patients with gastric cancer are analyzed as to the most common symptom, weight loss occurs most frequently with 83 per cent of the patients complaining of this symptom.

The analysis of figures on duration of symptom and operability indicate that cancer of the stomach may become inoperable before the patient has any symptom, but also that it may be operable even when the symptoms have been present for over two years. In studies of patients with resectable and non-resectable cancer of the stomach, the duration of symptoms percentage-wise is almost identical. The average patient when untreated dies within 12 months after the onset of symptoms.

Berlin and Porter reviewed a series of patients with carcinoma of the stomach and noted that all but 14 per cent had fever. Thirty-six per cent were thought to have fever of an infectious origin; 50 per cent had fever attributed to the neoplasm. The temperature was of an intermittent type, irregular and with no predilection to nocturnal or diurnal appearance. The fever may occur in the absence of ulceration, or ulceration may occur in the absence of fever as indicated in post-mortem studies.<sup>4</sup>

The most common cause of nonrecognition of moderately advanced and late cancer in all areas is the failure of the practitioner to examine his patients—particularly rectal and pelvic examinations.<sup>1</sup> But with gastric carcinoma the physical findings of early or moderately advanced lesions are relatively obscure. A definite palpable mass may be present in less than half of all patients seen. Cachexia and emaciation are late signs except when the cardia or pylorus is involved in an early stage. The palpation of a mass does not mean that the carcinoma is not resectable or the prognosis is poorer since studies indicate that there is little percentage difference in resectable and non-resectable cases. Physical findings due to metastasis to other organs are seen in a small number of cases.<sup>3</sup>

Laboratory aids in the early diagnosis of gastric cancer have not as yet given any simple and uncomplicated method to determine early cancer. Early laboratory detection must in some way be based on the abnormal pathologic physiology of the early carcinoma. There is a period of natural and normal maturation of tissues with some tissues possibly

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

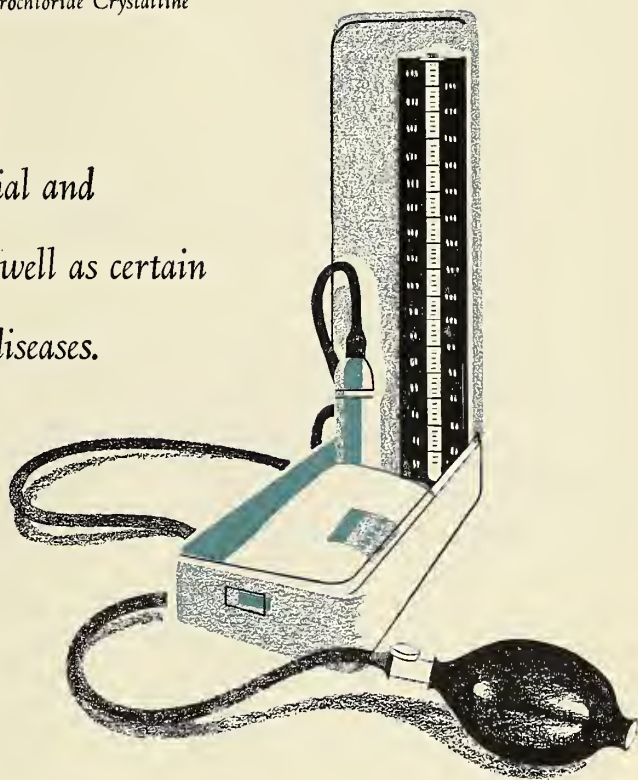
\*\*Thesis written while the author was a senior student at the University of Kansas School of Medicine. Dr. Fischer is now serving his internship at the U. S. Army Tripler General Hospital, Honolulu, Hawaii.



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more susceptible to precancerous change; there is the period of carcinoma in situ; then the period of early invasive cancer. It is in the last group that some serological test would be most useful. None of the many blood tests proposed for cancer detection have exceeded a 75 per cent specificity for advanced neoplastic disease, nor have any been proved to be specific in detection of early invasiveness.

Currently the most promising new diagnostic aid in cancer detection is the application of cytologic methods in the investigation of various body secretions.<sup>5, 6</sup> The success of this method is due to the exfoliation of malignant epithelial cells into body secretions. The basis of this lies in the reduced cohesiveness of cancer cells. Small cancers may contribute a much larger proportion of desquamated cells than the amount of surface area relative to that of the entire organ would seem to indicate.

Unfortunately, neoplastic cells in the gastric sediment are difficult to find and identify. This is due in part to the immense number of squamous cells from the mouth and esophagus and in part to the secretions in the stomach which early change the exfoliated cells. Experience of the observer, technique, and criteria of early cell change are further complicating factors. Perhaps 50 per cent of all cancer will be missed for one or more of these reasons and false positives are not uncommon, especially in cases of excessive gastritis. It does not seem to be of value as a mass screening device.<sup>7</sup> Papers dealing with this technique report accuracies ranging from 35 per cent to 63 per cent.<sup>5, 8, 9</sup> Obstruction with retention, very malignant tumors and much necrosis present hopeless problems from the standpoint of making a diagnosis.<sup>10</sup>

One of the older laboratory tests which may be done in general practice is that of gastric analysis. The relationship of achlorhydria to gastric cancer has been the subject of many articles. It is a relatively common condition and appears both in normal individuals and associated with diseases other than cancer. An average figure from the literature places achlorhydria at around 65 to 70 per cent in all cases of gastric cancer. In age groups over 50 the analysis of gastric acidity has proven a valuable mass screening device.<sup>11</sup>

Guiss has attempted to study the histologic basis for anacidity in gastric disease.<sup>12</sup> He has demonstrated that the number of normal appearing parietal cells in the mucosa of the gastric fundus is directly dependent on the degree of chronic atrophic gastritis present. Since gastric carcinoma in any area results eventually in a pangastritis, anacidity and achlorhydria are important diagnostic indicators.

Brunschwig postulates the presence of a gastric secretory depressant which he feels may be demonstrated experimentally in stomach extracts.<sup>13</sup> He objects to the gastritis anacidity hypothesis on the basis of finding apparently normal gastric mucosa in some persons with true anacidity. Segal has a method of determining gastric acidity without intubation.<sup>14</sup> Intubation is a time consuming procedure in mass surveys. Segal uses quininium resin indicator compounds from the cation exchange resin, Amberlite IRC-50. The quininium cation is displaced by hydrogen ions. Quinine studies are made on the urine to determine amount of hydrochloric acid present in the stomach. Gastric acidity studies remain as one of the better screening aids for gastric carcinoma.

Mass roentgenologic surveys have been made by several clinics.<sup>11, 15, 16</sup> In general, the detection of carcinoma of the stomach in a mass population using roentgenologic methods does not warrant the procedures and cost involved. However, a positive diagnosis may be made in about 90 per cent of those cases who have cancer of the stomach. Rigler used symptomless patients over 50 years of age but only if they had achlorhydria or free hydrochloric acid of less than 30 units after the use of histamine. He estimated that 90 per cent of gastric cancers will meet the above criteria. In 544 selected patients, three had cancer of the stomach and 19 had polyps.<sup>16</sup> The University of Minnesota has established a cancer detection center incorporating Rigler's criteria and additional criteria such as occult blood, family history of cancer, low unexplained hemoglobin levels, and upper GI symptoms. Seven patients were found to have gastric carcinoma in a series of 1,111 patients.<sup>11</sup>

At least two groups are experimenting with the use of photofluorographic methods. At Johns Hopkins all patients over 50 are now being examined by photofluorography. It is considered to be a low cost, minimum effort, rapid method of screening large groups. Where pathology is apparent, a complete GI series is done. So far, photofluorography approaches the more detailed roentgenologic methods in accuracy by detection of about one carcinoma of the stomach in 700 men and one in every 1,200 women, all asymptomatic patients. Roentgenology remains the number one diagnostic tool in the diagnosis of cancer; unfortunately, the diagnosis *per se* even in asymptomatic individuals may be too late.

The gastroscope may be used as a primary diagnostic tool or in conjunction with other methods of diagnosis. In general an expert gastroscopist can increase by only a few per cent the number of demonstrable gastric cancers detectable by roent-





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CARBOHYDRATE . . . . .	22 Gm.	VITAMIN A . . . . .	1000 I.U.	VITAMIN D . . . . .	140 I.U.
CALCIUM . . . . .	370 mg.	VITAMIN B <sub>1</sub> . . . . .	0.39 mg.	CALORIES . . . . .	225
PHOSPHORUS . . . . .	315 mg.	RIBOFLAVIN . . . . .	0.7 mg.		

\*Based on average reported values for milk.

genologic methods.<sup>18</sup> LaDue in one series using the flexible gastroscope raised the incidence of diagnosis from 88.9 per cent by roentgen examination to 96.5 per cent combined.

Another practical avenue to approach the early diagnosis of gastric cancer is to search for other conditions etiologically related to or associated with gastric cancer. This may be important in selection of patients for more extensive studies when mass surveys are undertaken.

The relation of atrophic gastritis to gastric carcinoma has been discussed for over 100 years. Older groups considered gastritis as a necessary precursor in 90 per cent of the cancers seen.<sup>19</sup> Recently the pathologists conclude that the relationship is unproved and unknown.<sup>20</sup> It has been fairly well proven recently that the carcinoma will give a pangastritis with degeneration of the fundus mucosa regardless of location or size.<sup>12</sup> Actually, on the basis of routine post mortem studies, atrophic gastritis is an exceedingly common condition with advancing age and is frequently associated with conditions other than gastric carcinoma. It is estimated that 80 per cent of the people over 40 years would have to be followed—an impossible task.<sup>2</sup>

Another prominent clinical association with gastric carcinoma has been pernicious anemia. A search for gastric cancer in patients with this disease will reveal an incidence which is much higher than would be expected in the same age group in the general population.<sup>21</sup> Three possibilities are proposed: (1) that pernicious anemia directly produces a precancerous state; (2) that gastric cancer causes pernicious anemia, or (3) that the two diseases are linked through a precursor or manifestations common to both.<sup>22</sup> The latter seems more likely.

There are familial tendencies in both diseases indicative of common constitutional or hereditary factors. Since the advent of liver therapy, the incidence of gastric carcinoma has been increased. The explanation probably lies in the longer survival of the patient rather than on the basis of liver as a carcinogenic agent. Other common factors lead back to achlorhydria and atrophic gastritis which were previously discussed. About 220,000 people die of pernicious anemia each year. The highest figure for coincidence with gastric cancer is 12.3 per cent.<sup>23</sup> If careful follow ups were made on each patient with pernicious anemia, it would amount to only one per cent of the total deaths from gastric cancer. This aspect of cancer detection should be exploited but it cannot produce a marked change in the overall situation.

The relation of gastric ulcer to gastric carcinoma is another field which has been extensively studied.

Smith recently reviewed a series of 600 cases of gastric ulcer of which 59 were proven to be malignant. Symptoms were similar in both diseases; with the exception of anacidity, other findings were quite similar. He concluded that gastric ulcers which have not healed in six weeks should be resected.<sup>24</sup> Shellito studied 195 cases of gastric perforation in which 101 were benign and 94 malignant. A typical ulcer history was obtained in 61.4 per cent in the benign and 28.5 per cent of the malignant.<sup>25</sup> The majority of authors express the belief that 10 to 20 per cent of gastric ulcers become malignant. In a careful control program of all patients with ulcers, about one cancer in 10 cases should develop. This method would lead to possibly 20 per cent of all gastric carcinomas.

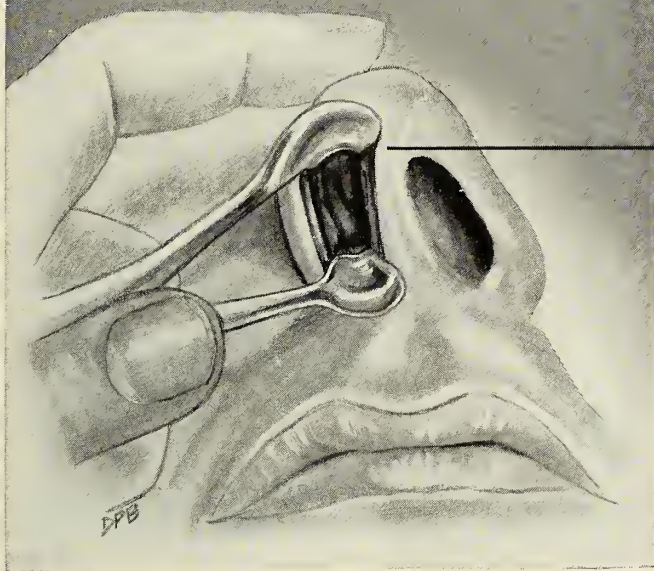
Gastric polyps are stated to be frequently precancerous in nature. Some pathologists state that the development of malignant change in polyps may be traced morphologically.<sup>28</sup> Estimates of malignant change vary from 12 to 50 per cent.<sup>26</sup> In the overall picture of gastric cancer, polyps are not important because if even 15 per cent became malignant it would still be about one per cent of the total cases of gastric carcinoma. Gastric polyps are fairly rare, but the frequency of diagnosis is increasing. They are more common in the males and occur at about the same age as cancer. They are frequently associated with atrophic gastritis and pernicious anemia; most cases are achlorhydric. Research on polyp formation and degeneration may throw light on the general pattern of malignant change and for that reason is important.

The title of this paper was "Early Detection of Gastric Carcinoma." As one can read in the literature, there is no sure method of gastric carcinoma detection let alone the detection of the early invasive stage. The detection of the early asymptomatic cancer is the prime problem; a problem which has not as yet been solved. Pack<sup>27</sup> developed a cure formula which is still applicable to all cases of gastric cancer: "Cures equal the total number of patients observed, minus the number of patients found to have inoperable gastric cancers, minus the operative mortality after resection, and minus the number of patients dying in the 3, 5 and 10 year postoperative periods after which definitive cures become possible." This formulation was made in 1936. Since then there have been tremendous strides in operative techniques, anesthesia, fluid balance and postoperative care; but all this has raised the overall picture from five per cent to 10 per cent in cures.<sup>29</sup> A factor which has not as yet been assessed is the enormous increase in research in the early detection of cancer.

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now going on, funds and personnel should be made available to every medical center for a cancer detection center. Not that the program will materially alter the cure rate at first, but agile minds should be given the opportunity to observe the technique and methods now in use in order to create better and earlier methods for diagnosing gastric carcinoma.

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## COUNTY SOCIETIES

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Officers of the Rush-Ness County Medical Society were elected recently as follows; president, Dr. W. J. Singleton; secretary-treasurer, Dr. R. E. Grene. A medical staff for the Rush County Memorial Hospital was also formed at the meeting, Dr. L. A. Latimer being named chief of staff and Dr. J. H. Baker being elected staff secretary.

\* \* \*

The Marion County Society was host to the

McPherson and Harvey County Medical Societies at a Thanksgiving dinner at Marion, November 8. Dr. E. H. Skinner, Kansas City, Missouri, spoke on "Treatment of Accessible Cancer at Clinical Conferences," using slides for illustrations.

\* \* \*

Members of the Nemaha County Society were guests of the Marshall County Society at a dinner meeting at the Marysville Country Club, October 25. Speaker of the evening was Dr. William Herbert, Lincoln, Nebraska, who spent a year in England. In his address he pointed out the flaws in the plan of socialized medicine.

\* \* \*

A meeting of the Sedgwick County Society was held at the Allis Hotel, Wichita, November 6. The program was given by the Cancer Committee of the society with Dr. W. H. Fritzemeier as moderator. Speakers were Dr. N. C. Nash, Dr. E. L. Mills, and Dr. B. E. Stofer. The subject was "Tumors of the Cecum and Ascending Colon."

\* \* \*

Dr. A. P. Cloyes was named president of the Butler County Society at a meeting held at the Hotel El Dorado, November 11. Other officers chosen are: Dr. H. Wallace Lane, vice president; Dr. James Shields, secretary; Mr. Gene Wilcox, executive secretary; Dr. J. H. Johnson, board of directors; Dr. F. A. Garvin, board of censors; Dr. G. G. Whitley, delegate; Dr. F. E. Dillenbeck, alternate. Speaker of the evening was Dr. C. F. Taylor, Norton, who spoke on the subject of tuberculosis and modern methods of treatment.

\* \* \*

Dr. Charles Anderson, retiring president of the Labette County Society, was host to the group at a dinner meeting at the VFW Building, Parsons, November 15. Guest speaker was Dr. C. E. Virden, Kansas City, who spoke on "What the X-ray Shows."

### Army Develops Casualty Bag

Increased protection for wounded soldiers exposed to frigid temperatures has been developed by the Army in the form of a new casualty bag. An exterior layer of cotton-nylon oxford cloth, insulated with down, forms the principal material of the bag, affording protection from freezing to 50 degrees below zero.

The special design of the bag, with a full-around zipper, makes it simple to place a wounded man inside. Special zippers opening anywhere around the outside permit treatment of wounds without exposing other parts of the body. The bag is roomy enough to accommodate a soldier wearing bulky Arctic clothing plus a splint.

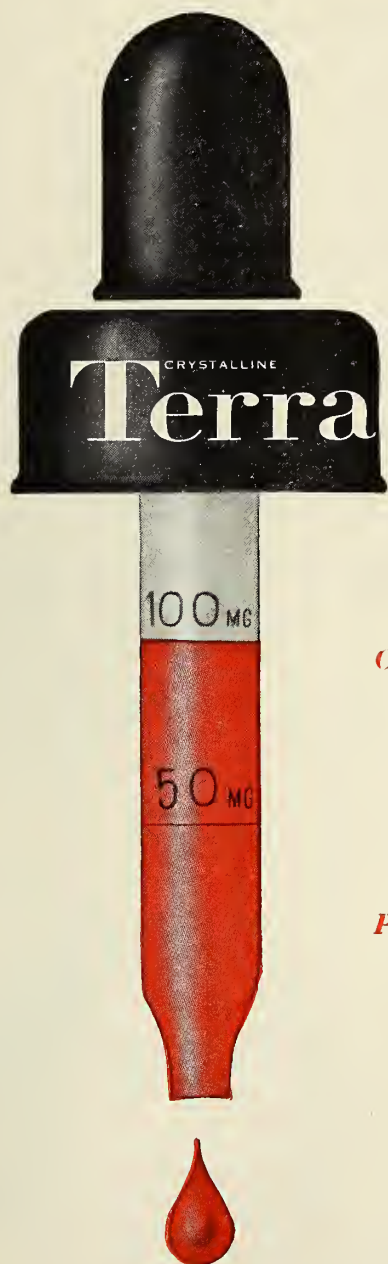


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## ABSTRACTS FROM CURRENT LITERATURE

### Priscol in Peripheral Vascular Diseases

*The Effects of Priscol in the Treatment of Peripheral Vascular Diseases.* By Frank Nathan, John A. Strazza, Jr., and James T. Helsper, *Ann. Int. Med.*, 35:1, 19-38 (July) 1951.

These authors first briefly discuss the actions of various drugs in the treatment of peripheral vascular disease.

Diethyl ether, first reported by Katz in 1946, has to be refrigerated because of its explosive potentialities, and was administered by him as a 2.5 per cent solution in five per cent glucose in distilled water. He first treated a group with diabetic arteriosclerosis obliterans, of which 80 per cent with impending gangrene were saved from amputation. Other types of peripheral vascular disease were treated with benefit. Untoward side effects have included fat embolism, jaundice, and gross hematuria.

Wirtschafter and Widmann used ascorbic acid and histidine as follows: 500 mg. of sodium ascorbate were given intravenously, followed by five cc. of a four per cent solution of histidine monohydrochloride intramuscularly plus 100 mg. of sodium ascorbate subcutaneously. These injections were repeated at 4 to 12 hour intervals and ascorbic acid was given orally. Clinically, 11 cases treated responded well to this regimen. Friedell, Drucker, and Pickett treated 25 patients with favorable response in most. However, Allen reported this therapy to be of no value.

Mufson has given histamine intra-arterially with measurable vaso-dilation of the affected limb and distinct clinical improvement.

Shute and coworkers reported remarkable results with a-tocopherol. These authors report it to be entirely inert.

Dibenamine is an effective adrenergic blocking agent. However, Hecht and his group reported severe toxic reactions in a majority of 70 patients. It is considered to be a valuable pharmacologic tool but with limited therapeutic possibilities.

Tetraethyl ammonium was initially reported upon very favorably by Lyons and coworkers. Further work has led to a much less enthusiastic outlook. DeBakey and Pearl, and the authors of this article, have concluded that it is of no value therapeutically or diagnostically.

Priscoline was first reported by Hartmann and Isler in 1939 as a possible agent for treatment of hypertension. Meier and Müller demonstrated the vasodilatory action of priscoline. Grimson and others

at Duke University found, with few exceptions, that single doses of 50 to 75 mg. produced changes in the circulation of limbs equivalent to those produced by sympathetic block or sympathectomy.

The authors treated 22 patients with priscol. The peripheral vascular diseases included peripheral arteriosclerosis, thromboangiitis obliterans, frostbite, and Raynaud's disease. Two normal controls received the drug. Oscillometric readings were taken, and temperature readings were made on each of the toes and dorsum of the foot.

The average daily oral dose was 200 to 250 mg. taken in divided dose. The average intravenous dose was 50 mg., given three to four times a day.

Results in the majority of cases were good. All patients showed increased collateral circulation as shown by temperature studies. Intermittent claudication was abolished or improved in most. In cases of thromboangiitis obliterans and frostbite, the ulcerations healed. There were no alarming side reactions.

Of the various drugs discussed, the authors conclude priscoline and intra-arterial histamine appear to be of greatest clinical promise.

Finally, treatment of peripheral vascular disease should be based on time-proved methods, such as rest, intermittent venous occlusion, oscillating bed, reflex vasodilatation by distal application of heat, local and sympathetic nerve blocks, sympathectomy, vascular exercise, foot hygiene, etc. Vasodilators should be used only as supplementary agents.—*E.J.R.*

\* \* \*

### Paralysis After Injections

*Local Paralysis in Children after Injections.* By J. K. Martin, *Arch. Dis. Child.*, 25, 1-13 (March) 1950.

Seventeen children are described in whom paralysis of a single limb occurred within 28 days of receiving an injection. Fifteen injections were for immunization and two for penicillin. Paralytic cases are not included unless paralysis occurred within 28 days. The average time between the injection and the onset of the flaccid paralysis was 16 days. The majority occurred between 7 and 21 days. The shortest interval was three days and the longest 26 days. All the patients were ill at the time of the paralysis, some mild and a few severe. Neck rigidity was present in four cases.

It seems possible that in these post inoculation cases, polio virus was introduced at the time of the injection of penicillin or immunization materials.

Investigations now in progress by the New York State Board of Health have shown the occurrence of many similar cases in the United States.



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The desirability of discontinuing elective injections during epidemics of poliomyelitis is possibly debatable, but it is certainly important that needles and syringes be carefully sterilized (preferably by autoclaving), and that a strong antiseptic such as iodine be used on the skin and on the stoppers of materials used for injection.—D.R.D.

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## ANNOUNCEMENTS

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The Mississippi Valley Medical Society will sponsor its 12th annual essay contest in 1952, offering a cash prize of \$200, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest, including medical economics and education. Contestants must be members of the A.M.A. and residents and citizens of the United States.

Contributions, not to exceed 5,000 words, must be submitted in five copies not later than May 1, 1952. Complete information may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209 W.C.U. Building, Quincy, Illinois.

\* \* \*

The Foundation of the American Society of Plastic and Reconstructive Surgery, Inc., in announcing winners of this year's awards in its essay contest, revealed plans for a similar competition in 1952. Information may be secured from the Award Committee, c/o Jacques W. Maliniac, M.D., 11 East 68th Street, New York 21, New York.

\* \* \*

The American Board of Obstetrics and Gynecology announces the election of Dr. John L. Parks, Washington, D.C., as a member and director of the board. Dr. Parks succeeds Dr. Joseph L. Baer, who has been vice president of the board for more than 20 years.

\* \* \*

The Cancer Cytology Center of the Dade County Cancer Institute, an affiliate of the Medical Research Foundation of Dade County, Miami, Florida, has announced its first one-week seminar for physicians to be held at the Institute, January 14-19, inclusive. Attendance will be limited to 35 physicians, applications being accepted through January 12. Information may be obtained from the Institute, 1155 North West 14th Street, Miami, Florida.

\* \* \*

The 17th International Congress of Ophthalmology will be held in New York City in the autumn of 1954 at the invitation of the American Ophthalmological Society, the Section on Ophthalmology of the A.M.A., the Association for Research in Ophthalmology, and the American Academy of

Ophthalmology and Otolaryngology. The first council was held in Brussels, Belgium, in 1857, and congresses have been held at four-year intervals since that time except for interruptions caused by war. New York was the scene of the fifth congress 78 years ago.

\* \* \*

The Fifth American Congress on Obstetrics and Gynecology will be held at the Netherland Plaza Hotel, Cincinnati, March 31-April 4, 1952 under the sponsorship of the American Committee on Maternal Welfare.

Congress registration fees are \$5.00 for members and \$10 for non-members. Information may be secured from Mr. Donald F. Richardson, Executive Secretary, 116 South Michigan, Chicago 3, Illinois.

### Symposium on Weight Problems

Four organizations, the American Medical Association, the American Dietetic Association, the Metropolitan Life Insurance Company and the United States Public Health Service, cooperated in an exhibit symposium on related overweight, nutrition and health problems at the clinical session of the A.M.A. in Los Angeles, December 4-7.

Continuous demonstrations were presented at five exhibits, and competent speakers discussed the subject at half-hour intervals throughout each day. A motion picture, "Losing to Win," was shown twice daily.

### Lilly to Feature Painting Series

As part of a widespread campaign to publicize unique qualities and benefits of American medicine, emphasizing the conviction that an aroused America is the most formidable bulwark against the many threats to freedom in our country, Eli Lilly and Company will feature a "Medicine in America" series of paintings in its bimonthly publication, *Physician's Bulletin*, in 1952.

Six scenes have been chosen to illustrate representative aspects of America's patient-physician relationship. These will appear as a cover-flap in each issue and will be bound so that they may be taken out and displayed in physicians' waiting rooms.

### Antabuse Available

Antabuse, a drug recently developed for use in alcoholics, is now available for general prescription employment. Taken alone it produces no reaction, but if the patient under treatment indulges in even small amounts of alcohol, extreme discomfort results. It should be prescribed under close medical supervision and with the full knowledge of the patient.

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## BOOK REVIEWS

*Peptic Ulcer—Clinical Aspects, Diagnosis, Management.* Edited by David J. Sandweiss. Published by W. B. Saunders Company, Philadelphia. 790 pages, 164 figures. Price \$15.

This volume was published under the auspices of the American Gastroenterological Association and is a compendium of the individual contributions of 77 distinguished authorities. The entire work was edited by a board of 12 men, headed by Dr. Sandweiss.

Extensive discussions of the embryology, anatomy, and physiology of the upper gastro-intestinal tract are followed by critical reviews of the various theories of etiology and pathogenesis of peptic ulcer. Medical and surgical treatment are separately discussed in great detail by several authors. Special consideration is given to the problem of peptic ulcer in the very young patient and in the aged; complications of peptic ulcer and their management are dealt with in great detail.

Numerous charts, reproductions of x-ray films and schematic drawings illustrate the eight sections of the book which is further divided into 64 chapters. As a source book with complete references it can be recommended to the student, the teacher, the author, and the practitioner. It is easily the most complete and authoritative treatise available on the subject.—M.S.A.

\* \* \*

*An Atlas of Normal Radiographic Anatomy.* By Isadore Meschan. Published by W. B. Saunders Company, Philadelphia. 593 pages, 1044 illustrations. Price \$15.

This atlas is intended as a reference for general practitioners, as a book for radiology students, and for the use of topographical anatomists. It differs from x-ray manuals on technique in the respect that more detailed descriptions of normal anatomy replace specific discussions of exposure factors.

The illustrations are excellent. The diagrams are good illustrating methods of positioning patients for x-ray views. Representative x-ray films made in those positions are well reproduced as negative prints, and the labelled tracings made from these films are helpful. The anatomical cuts largely are borrowed from standard textbooks of human anatomy.

The book is arranged by body systems, and the material on the skeletal system is further arranged by body regions. Descriptions of bones make up a little over half of the book.

The book will be a desirable addition to the doctor's library shelf.—R.W.

*Psychosomatic Gynecology: Including Problems of Obstetrical Care.* By William S. Kroger and S. Charles Freed. Published by W. B. Saunders Company, Philadelphia. 503 pages. Price \$8.00.

The text has been divided into four parts: the psychosomatic aspects of fetus and infant, the psychosomatic aspects of neuroendocrinology and the common psychosomatic problems. A fifth portion of the book discusses and describes the methods of diagnosis and treatment from the psychosomatic viewpoint.

*Psychosomatic Gynecology* is a book which undoubtedly has a place in the obstetrician's, gynecologist's and general practitioner's library. Both the organic and psychosomatic disorders are discussed and as nearly as possible correlated. The hitherto all too frequently neglected or ignored psychic aspects of women's fears, ignorance and misinformation with the resultant expression of these by means of functional or organic disorders is well presented. Some of the ideas presented are not totally acceptable, and the book tends of necessity to be repetitious; however, the book is well worth reading and is a step toward the correction of deep-seated emotional problems complicating obstetrics and gynecology. It has been written primarily for the practicing gynecologist or obstetrician, rather than for the psychiatrist, and should be very useful as well as practical to the physician.—R.S.

\* \* \*

*Technical Methods for the Technician. Fourth Edition.* By Anson Lee Brown. Published by Anson L. Brown, Inc., Columbus, Ohio. 784 pages. Price \$10.

This is the fourth edition of a book which is published by the author. As he states in the preface, it is written with the beginning student in mind and he hopes that it is received in the same light. The reviewer feels as though this is a book for a beginning technician and not one for the graduate. It is written more in the style of a laboratory manual, rather than as a book on technical methods.—S.J.W.

\* \* \*

*Statistics for Medical Students and Investigators in the Clinical and Biological Sciences.* By Frederick J. Moore, Frank B. Cramer and Robert G. Knowles. Published by the Blakiston Company, Philadelphia. 113 pages, 11 figures, 16 tables. Price \$3.25.

The approach is as palatable as it could be to one uninitiated in this field; difficulties in presenting such subject matter are hinged upon lack of background upon the part of the reader on one hand, and upon his lack of sustained interest on the other. Were this latter not the case, there would be more persons familiar with the terminology and with strong mathematical background. Therefore, such



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authors are at the disadvantage of presenting subject matter in a veritable foreign tongue.

The "Design of Experiments and Presentation of Results" which is well covered in a lucid fashion is most worthy of consideration of students of medical sciences at all levels of training and career. This book is the type requisite to research especially, but it is of great merit to those who may be intellectually curious and only try to better appreciate investigative work. This is particularly important in medicine and biological sciences.

To quote from the final summary one may gain insight into the presentation and philosophy of these authors, and such a passage follows: "Research is conducted essentially for the purpose of self-education and is supported because of its potential educational value for others, with all the secondary benefits which may come from increased knowledge and understanding . . . The subject of statistics should be considered as a basic science of investigation whether . . . concerned with . . . lipotropic influence of a chemical, the therapeutic value of penicillin, or the effect of potassium on the T wave."—T.R.H.

### Committee on Physical Medicine Disbands

The Baruch Committee on Physical Medicine and Rehabilitation announced recently that it had achieved its goals and was discontinuing its activities. At the same time Mr. Bernard M. Baruch, New York, the sponsor of the group, which has been active since 1943, announced that he was watching the institutions to which he had made grants and that it was his object to make further grants "to those who undertake the work with enthusiasm and beneficial results."

The committee had been formed by Mr. Baruch to develop and advance the special field of medicine devoted to the diagnosis and treatment of disease by physical agents and to the rehabilitation of disabled persons. Mr. Baruch has provided well over \$2,000,000 of his personal fortune to support this branch of healing in honor of his father, the late Dr. Simon Baruch, who was the leading medical pioneer in this field.

In announcing achievement of its goals, the committee mentioned the following activities in which it had participated:

1. A marked increase in the teaching of physical medicine and rehabilitation in the medical schools of America.

2. An extensive increase in the number of residencies in physical medicine and rehabilitation.

3. The rehabilitation of many thousands of wounded soldiers and sailors as well as still greater numbers of persons injured in civilian life.

4. Complete recognition of the new medical specialty of physical medicine and rehabilitation.

5. The establishment of a new Section on Physical Medicine and Rehabilitation in the American Medical Association.

6. The organization of an American Board of Physical Medicine and Rehabilitation to certify qualified specialists in this field.

7. Stimulation of the establishment of community rehabilitation centers throughout the country.

8. Clarification of the standards for determination of the physical fitness of the workers of the nation.

9. Improvements in the teaching of medical physics.

Make hotel reservations now for the 92nd annual session of the Kansas Medical Society, Kansas City, Kansas, April 27-May 1, 1952. Write the Town House, Kansas City, Kansas.

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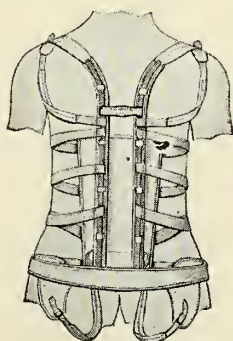
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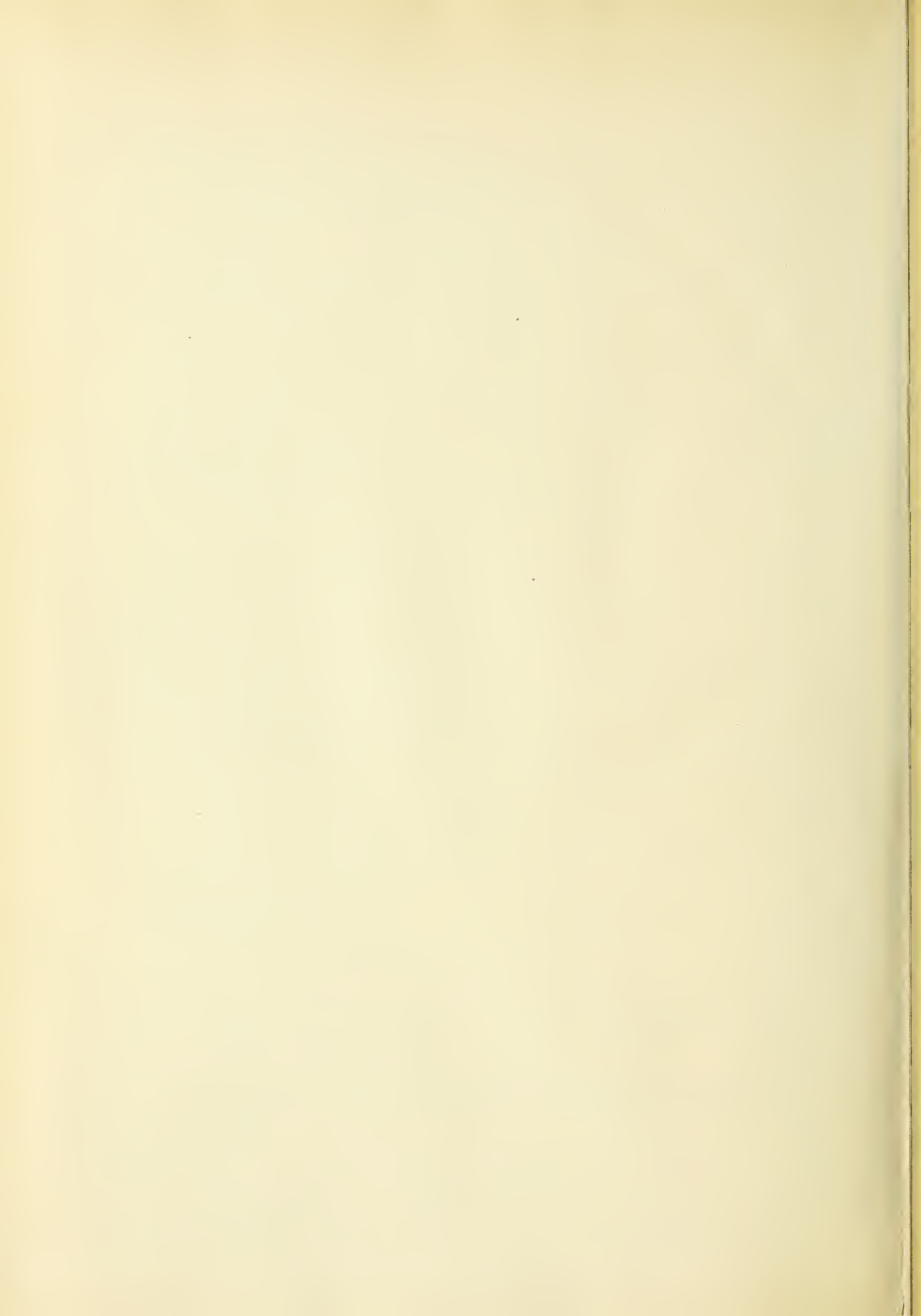
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